

13-194131

# Pacific Viewpoint

Contents of Volume 1, Number 1, March 1960.

	Page
Foreword by J. Williams, LL.M. (N.Z.), Ph.D., Hon. LL.D. (Camb.), Vice-Chancellor, Victoria University of Wellington	iii
Introducing <i>Pacific Viewpoint</i> <i>The Editor</i>	iv
Plant Introduction in the Tropical Pacific: Its Role in Economic Development <i>J. Barrau</i>	1
The Changing Landscape of Rural China <i>Keith Buchanan</i>	11
Aspects of the Political Geography of Southeast Asia: A Study of a Period of Nation-Building <i>T. G. McGee</i>	39
The Nature of Shifting Cultivation: A Review of Recent Research <i>R. F. Watters</i>	59
The Asian and Pacific Scene <i>G</i>	100
Geographical Reviews <i>I</i>	114

*P12*

## EDITORIAL BOARD

Editor: PROFESSOR KEITH BUCHANAN

Assisted by the staff of the Department of Geography  
Victoria University of Wellington

*The Editorial Board is not responsible for the opinions or  
statements of writers in this Journal*

Published twice yearly by the Department of Geography, Victoria University of  
Wellington, New Zealand, and printed at the press of Wright & Carman Ltd.,  
Wellington, New Zealand

Editorial Offices: P.O. Box 196, Wellington

10s. (\$1.50) a number

£ (\$3) a volume

Copyright reserved

## THE ASIAN AND PACIFIC SCENE

		<i>Page</i>
Population and Employment Prospects in Japan	<i>J. W. Macnab</i>	100
The Indonesian Dilemma	<i>Leslie H. Palmier</i>	102
Cargo cults and Social Change in Melanesia	<i>R. F. Watters</i>	104
Post-War Migration to Australia	<i>E. J. Donath</i>	108
The Maori in Town and Country	<i>J. Booth</i>	111

## GEOGRAPHICAL REVIEWS

Karl A. Wittfogel, "Oriental Despotism"	<i>Peter Munz</i>	114
Norton Ginsburg (Editor), "The Pattern of Asia"	<i>Keith Buchanan</i>	117
O. H. K. Spate, "The Fijian People: Economic Problems and Prospects"	<i>V. D. Stace</i>	119
Charles F. Richter, "Elementary Seismology"; Hugo Benioff, "Circum-Pacific Tectonics"; G. A. Eiby, "Earthquakes"	<i>D. W. McKenzie</i>	121







## Foreword

ON behalf of the University I have much pleasure in welcoming this *Journal*, and congratulating the staff of the Geography Department, whose planning and efforts have made possible the launching of the venture, on their enterprise and the excellence of the production.

The *Journal* is a recognition that New Zealand's destiny is that of a Pacific country and that, although our cultural heritage is derived from Europe and in particular the United Kingdom, many of our neighbours differ from us both in culture and in race. There is an increasing awareness in New Zealand that the members of the Pacific group of nations must learn to live as a community knit together by friendship based on an understanding of each other's interests and problems. Knowledge is the key to this situation and we in New Zealand have in the past been sadly lacking in such knowledge.

In this University there have for many years been those who have striven to bring about a change in our condition of ignorance, and we have taken some positive steps to this end. I would mention our pioneering action in establishing a Department of Asian Studies, whose particular interest is in our Asian neighbours. In the Geography Department there has long been a strong emphasis on the Pacific viewpoint, and our economists, educationists, historians, lawyers, psychologists and zoologists have likewise directed the attention of their students to the Pacific. Members of our staff, both present and past, have played and are playing an important part in the deliberations and planning which are transforming the constitutional and economic status of New Zealand's Pacific dependencies and leading those dependencies to a condition of adult nationhood. We have given a warm welcome to proposals (unhappily not yet carried into effect) for the provision of special training for those who have the responsibility of administration in New Zealand's Pacific territories.

Although this *Journal* is produced by the Geography Department of the University, its editorial staff hope that it will constitute a forum in which Pacific specialists in the social and natural sciences both within the universities of New Zealand and outside of those universities will find an opportunity to contribute to widening our understanding of our Pacific world. I would particularly thank those from outside the University who have contributed to this inaugural number.

I hope that this *Journal* has the success which the aims and labours of its promoters deserve, and that it will encourage an informed interest in the great geographical area which is the stage on which New Zealand's destiny will be worked out.

J. WILLIAMS  
Vice-Chancellor

February 1960

## Introducing *Pacific Viewpoint*

IN initiating the publication of *Pacific Viewpoint* we have been prompted by two considerations: firstly, the increasing world importance of the Asian and Pacific countries; secondly, the need for a journal which, while basically geographical in its emphasis, would be able to present the work of scholars in the social and natural sciences who are also concerned with this regional field.

The growing importance of the Asian-Pacific world needs little stressing. It is linked with the great expansion of Asia's population which is taking place and with the technological transformation of the old societies of Asia. These demographic and technological revolutions are shifting the centre of world power from the Atlantic towards the Pacific basin. The two giants of our time—the U.S.A. and the U.S.S.R.—are both Pacific powers; so, too, is China, the emerging giant. The political emergence of new Asian states and their growing role in the United Nations underlines this revolution. The increasing output of books on the social, political and economic development of Asia indicates an awareness of these developments and of their implications for the West. The pace of change is so rapid, however, that most texts are outdated by the time they appear. There is thus an urgent need for periodicals which will provide an up-to-the-minute assessment of recent developments. While several long-established journals are available to those wishing to publish analyses of political or economic changes, there is no periodical dealing exclusively or mainly with the changing geography of the Asian-Pacific world. *Pacific Viewpoint* is intended to fill this gap.

A balanced understanding of the new world that is emerging is dependent on the work of scholars in many disciplines. Areal studies, focused on a distinctive region, no less than inter-disciplinary studies of specific problems, provide such a balanced understanding and have helped to break down the rigid boundaries between subjects. Moreover, each subject gains from progress in related disciplines; our knowledge of the geography of the Pacific world has, for example, been greatly widened by the work of sociologists and anthropologists, of archaeologists and historians. The second objective of this journal is to make possible the publication of such studies, made from widely differing viewpoints, yet focused on the Pacific area. In so doing, the journal will retain its geographical character, but our hope is that each issue may contain contributions by workers in related fields. In this first issue we have been fortunate in drawing on contributions from agronomists, historians, sociologists and economists. It is hoped that workers in these and related fields may contribute to future issues. And we may stress that, just as it is important, if the journal is to fulfil its purpose, to

draw on contributors from many fields, so, too, it is important to present a diversity of viewpoints. The interpretation of a rapidly changing Asian scene lends itself to such a diversity; only by welcoming this can a real independence of outlook be attained.

The present issue contains papers on some of the major themes which give a unity to our Asian-Pacific world. It is a dominantly peasant world, whose life rests on a variety of agricultural systems, ranging from the *sawah* cultivation of Java to the shifting agriculture of upland Korea. There is a fundamental contrast between those systems characterised by permanent cultivation, whether of dry or irrigated crops, and those based on shifting cultivation. These latter have become "marginal economies" and in much of upland Asia and the Pacific are showing signs of breakdown. In his paper, R. F. Watters examines this shifting cultivation; he illustrates how oversimplified many of the current descriptions of it are and how delicate are the balances established by various groups with an exacting environment. He shows that shifting cultivation represents an "ecological climax" beyond which little evolution could occur until the whole ecosystem was disturbed. The impact of the West, in Asia no less than in Africa or Latin America, has destroyed the old balance. Attempts to recreate the old pattern are useless; the problem facing these marginal economies is "to establish a new relationship that does not violate the 'design of nature' and yet is consistent with the needs of a twentieth century world" (p. 95).

This peasant world was by no means entirely isolated; the introduction and diffusion of new crops altered the rhythm of rural life and made possible the expansion of both cultivated area and population (p. 11). Jacques Barrau's study of plant introduction in the Islands illustrates the importance of the contribution made by such borrowings from the outside world. These introduced plants helped to make life possible on the most destitute islands of the Tropical Pacific. They provided man with a "biological auxiliary" which enabled him to extend his living space out from Southeast Asia into the island-dotted world of the Central and South Pacific, a process which sometimes involved the skilful creation of an artificial environment suited to the specialised needs of his introduced food crops (p. 3). And, when the Island populations were drawn into production for a cash market, plants introduced during the period of European contact were to play a major role in the development of dangerously specialised export economies.

Most of these Asian and Pacific countries were formerly colonial or semi-colonial territories; in this legacy and in the problems they face in reshaping their political structure lies another common theme. All face the problem of cultural pluralism, since they have to integrate in one social and political framework both advanced lowland societies and backward hill peoples and groups who are indigenous and others resulting from more recent immigration. T. G. McGee's paper discusses

these aspects in a Southeast Asian context; he analyses the diversity-in-unity which results from the history of the various countries, from the character of the former colonial regimes and the conditions under which independence was attained. An awareness of these diversities is important to an understanding of the contemporary scene: concepts such as "democracy" or "socialism" have a different content in Southeast Asia from in Western Europe and there are also significant contrasts in their interpretation between one Southeast Asian country and another.

The attainment of political independence has been followed in each country by attempts to diversify the economy by industrialisation. The elimination of poverty and of economic backwardness is as important as the elimination of colonial control if these emergent countries are to attain real equality with the developed countries of the West. The problems of economic development faced are, however, very different from those faced by the older industrial countries. In Asia the major resource is represented by the great concentrations of population and economic advance must initially depend on a programme which converts this labour into capital. The development schemes of India and China, though based on contrasting political and social philosophies, are major steps in this direction. Keith Buchanan examines some of the changes in the rural landscape of China brought about by the boldly-conceived development plans of the Chinese Peoples' Government. While a final judgment on the Chinese achievement is scarcely possible, two points emerge very clearly: firstly, the close relationship between institutional change and economic development; secondly, the fact that Communist planners, by insisting on the simultaneous development of large-scale modern industry and small-scale "native-type" industry, are creating a new and distinctive type of society in their rural areas. Both of these points are of obvious significance to the other underdeveloped nations of Asia, and of Africa and Latin America, who face rather similar problems.

Many of the topics discussed are controversial and the views expressed are those of the authors concerned. The Editorial Board hopes that the diversity of views expressed, and the controversial quality of some, will provide a stimulus to all those concerned with an understanding of the changes that are transforming the Asian and Pacific scene.

THE EDITOR

# Plant Introduction In The Tropical Pacific

## *Its Role in Economic Development*

JACQUES BARRAU

THE changes which have taken place in the social and economic life of the tropical Pacific islands since their discovery by the Europeans have been the subject of many studies. One of the factors of these changes which deserves to be better known is plant introduction. The economic flora of these islands has been enriched both by the foreigners who have visited them or have settled there since the sixteenth century, and by ancient migrations. As the economy of the tropical Pacific territories was, and still is, largely based on agriculture, many of the useful plants thus introduced have been responsible for appreciable modifications in the life of the islanders.

### IN ANCIENT TIMES

In the pre-European era, the tropical Pacific islands knew only a subsistence economy, based, in some cases, on food-gathering, but more generally on bush-fallowing horticulture. The sustenance crops included mostly tubers such as yams (*Dioscorea* spp.), and various aroids of which the most important was taro (*Colocasia esculenta*). Fruits like those of the banana (*Musa* spp.), the coconut palm (*Cocos nucifera*), and the breadfruit tree (*Artocarpus altilis*), were also among the staple foods. The main agricultural implement was the digging-stick.

There is no need here to describe at length the traditional subsistence horticulture and food plants of Oceania about which additional information can be found elsewhere.<sup>1</sup>

It is important to note that perhaps nowhere else in the tropical world have starchy tubers played such an important role in native subsistence economy. Cereals were apparently unknown, except in one territory, Guam, in Micronesia, where rice seems to have been grown in pre-European days.

Many of the cultivated food-plants of pre-European Oceania were brought to the islands by the migrants who populated them. The greater proportion of these plants came, most probably, from the areas included

*Jacques Barrau, formerly plant introduction officer of the South Pacific Commission, Noumea, New Caledonia, is now executive officer for economic development.*

<sup>1</sup> Barrau (1957) and (1958) and Barrau (in press).

<sup>2</sup> Vavilov (1949-50).



by Vavilov<sup>2</sup> in what he called the "Indian and Indo-Malayan centers of origin of cultivated plants".

The writer has suggested elsewhere<sup>3</sup> that the geographical definition of the second of these centres—the Indo-Malayan one—was perhaps too narrow, and that it could be modified eastwards so as to include Western Melanesia, especially New Guinea and adjacent islands. This part of Oceania could have been the centre of origin of food plants such as the sago palm (*Metroxylon* spp.), the *fehi* banana (*Musa troglodytarum*), and, perhaps, the sugar cane (*Saccharum officinarum*).

It is certain that economic plant introduction started in Oceania with the ancient human migrations. However, there are instances in early times where local plants were probably used as a source of food through gathering. Such was the case, for instance, of ferns possessing edible rhizomes or containing starch in their stipes (*Cyathea*, *Marattia*, *Nephrolepis*, *pteridium* spp.) of *Cycas*, of which the ovules were eaten, of seeds of some *Agathis* pines, and of *Pandanus*.

The food resources offered by the native flora of Oceania were nevertheless very limited and the staple food plants grown in the islands, when the Europeans discovered them, were, for the most part, introduced species. A good, but rather controversial, example of such introduction is the sweet potato (*Ipomoea batatas*), which seems to be an exception to what has already been stated about the Indian and Indo-Malayan origin of many Oceanian subsistence crops.

Since the polemics which followed Heyerdahl's memorable crossing of the Eastern Pacific on the "Kontiki" raft,<sup>4</sup> it is commonly held that the possible centre of origin of the sweet potato is in Central and South America and it could have been introduced from there into Polynesia by ancient voyagers. Some botanists, however, do not agree with this opinion and a good example of the rather fierce controversies on this subject can be found in the last book of the late Professor Merrill.<sup>5</sup> This sweet potato is also grown in the central highlands of New Guinea where it is the staple food and where it was already being grown before the Europeans visited these areas. One possible explanation is that it was brought into New Guinea from nearby eastern Indonesia, around the sixteenth century, after the Portuguese had introduced it there from America. The rather hostile ecological conditions prevailing in the main part of the New Guinea highlands (cool and rainy) made special horticultural methods necessary to grow the sweet potato on waterlogged ground. The result was the extraordinary gardening system with drainage which is a characteristic of many a highland valley of New Guinea, such as in the Baliem area or in the vicinity of the Wissell Lakes.

<sup>3</sup> Barrau (1957).

<sup>4</sup> Heyerdahl (1952).

<sup>5</sup> Merrill (1954).

In some areas, it seems that certain new agricultural techniques were also introduced by migrants. Thus, in New Caledonia, old legends tell the story of newcomers who arrived in the island "once-upon-a-time" and taught the inhabitants how to grow taro (*Colocasia esculenta*) on irrigated terraces.

Moreover, inter-island voyages resulted in a considerable exchange of plant material. In Uvea Island, one of the Loyalty group, off the east coast of New Caledonia, can be found a cultivar of an edible aroid (*Alocasia macrorrhiza*), a type of coconut palm with very large nuts, and some varieties of breadfruit which appear to have been introduced into this part of Melanesia by Polynesians from Wallis Island. They arrived and settled in the Loyalty group probably around the sixteenth century and the above-mentioned plants still bear their Wallisian vernacular names in Uvea.

Through plant introduction by ancient migrants, human life became possible on the most destitute islands of the Tropical Pacific—the atolls. These low coral islets have not much to offer in the way of natural vegetable food resources. Almost all of the few sustenance crops traditionally grown there were introduced by the migrations. In some cases, the introduced plants needed to be acclimatised to the peculiar conditions of the atolls. The soil is coral sand, and fresh water is only present as a lens in hydrostatic balance on the brackish ground-water. Needless to say this is not a very suitable environment for gardening. In spite of this adverse situation, *Cyrtosperma chamissonis*, an aroid with edible tuber, to give only one example, was, and still is, grown on the Micronesian atolls. The species seems to have its origin in the swamps and tropical rain forests of the Indo-Malayan area. To grow it on the atolls in the Gilbert Islands, for instance, the Micronesians have developed specialised techniques. Pits are dug in the central part of the islets until the level of the relatively fresh ground-water is reached. On the mud, the *Cyrtosperma* grows in baskets filled with compost and thus finds an artificial environment rather similar to its natural one.

The above description is intended to provide a general idea of the pre-European agriculture and economic flora of Oceania. We are, however, far from having a complete history of agriculture in the old days of the tropical Pacific islands; in New Guinea, for instance, stone mortars and pestles, often large-sized, are common archaeological finds yet the Papuans do not seem to have any tradition concerning the past use of these implements. They are so commonly found that one might surmise that they were in daily use, perhaps for food processing. If such was the case, this raises the question of what type of food was crushed or hulled in such a manner. Perhaps the cereal used was one such as "Job's tear" (*Coix lacryma jobi*), a common weed in New Guinea as in many other Pacific islands. Today in Oceania, however, the fruits of this plant are only used for ornamental purposes, such as

necklaces, although the hill peoples of the Philippines and India still use the "Job's tear" as a food plant. The purpose of these mortars is a fascinating problem; its solution must await methodical archaeological research taking place in New Guinea.

The pre-European economy of Oceania—a strictly subsistence one—was thus largely based on introduced plants. On an average, in the traditional diet of the Pacific islanders, more than eighty-five per cent of the quantity of food consumed was of vegetable origin. In most cases this came from foreign sustenance crops introduced into Oceania by the ancient migrations.

#### THE EUROPEAN ERA IN PLANT INTRODUCTION

With the early European voyages of discovery and exploration in the tropical Pacific, a new era in plant introduction began.

When, at the end of the sixteenth century, Alvaro de Mendana and Pedro Fernandez de Quiros discovered the Marquesas Islands and tried to establish a settlement there, one of their first actions was to sow maize (*Zea mays*).

During the seventeenth century a number of food plants was introduced into Guam by the Spaniards, whose galleons then sailed across the Pacific from Mexico to the Philippines and back via Guam. In 1676, maize was already well-established there as a sustenance crop and "tortillas", the Mexican pancakes made from ground maize, soon became a common feature of Guamanian meals. This cereal was not the only useful species brought to Guam by the Spaniards. They also imported the sweet potato (*Ipomoea batatas*), which in Guam still bears its old Mexican name, *Camote*, as do many other useful plants introduced in the same way, such as the yam bean or *Hikamas* (*Pachyrrhizus erosus*), the spinach-like *Amaranthus* known as *Kiletas*, and the peanut (*Arachis hypogaea*) known to Guamanians as *Kakahuate*.

The story of maize in Guam is an example of a rather important change in subsistence economy. Before the Spanish days, yams, taro and other aroids, breadfruit trees and bananas were the staple food plants while rice was also grown. These plants lost some of their importance as they were gradually superseded by the introduced maize. It became so much in demand that two crops were regularly attempted during the year: the first one, sown after the April rains, was harvested in September and called *las primeras*; and the second one, sown between September and November, was called *los aventureros* and, as the Spanish name implies, was rather a gamble.<sup>6</sup>

In the generously-minded eighteenth century, at the time of the British and French voyages of exploration in the Pacific, a number of

<sup>6</sup> Safford (1910).



plants were imported with the specific purpose of enriching the economic flora of the islands visited, and improving the food resources of the islanders. This was sometimes done with more beneficence than technical knowledge. Thus Bougainville, visiting Tahiti in 1767, decided to show the natives how to make a garden in the French way and sowed it in wheat, barley and oats. . . . Cook and the illfated La Pérouse had a sounder approach to the problem and climatological analogues were taken into consideration when selecting the plants they wanted to introduce into the Pacific islands. Thus came to Polynesia, on board Cook's ships, *Citrus*, pineapple, perhaps peanuts, again maize and also some tropical green vegetables, among them probably the Calalou (*Xanthosoma brasiliense*) from the Caribbean Islands.

During the nineteenth century, missionaries, traders and sailors furthered these plant introduction activities. As far as Polynesia is concerned, the writer has elsewhere given<sup>7</sup> some details about the history of plant introduction by the Europeans in this part of Oceania. To quote only the example of Tahiti, the following is a list of some useful plants introduced there in the nineteenth century: cassava (*Manihot utilissima*) in 1850, cashew-nut (*Anacardium occidentale*) in 1875, mango (*Mangifera indica*) in 1848, Arabian coffee (*Coffea arabica*) in 1817, vanilla (*Vanilla* spp.) in 1848, cocoa tree (*Theobroma cacao*) in 1880.

During this century, the improvement of inter-island communications facilitated the exchange of plant material. Thus a native of the Loyalty Islands, a teacher of the London Missionary Society, was sent to Papua; on returning to his island, he took back a number of plants, including a Papuan cultivar of the yam, *Dioscorea alata*. It is today commonly grown everywhere in the New Caledonian archipelago and is known to the natives by the simple name of *Papua*.

Even "black-birding" played its part in plant introduction: the Melanesians who returned to the New Hebrides after their forced sojourn on the Australian plantations found means of taking back various plants. In this archipelago vernacular names of varieties of sugar cane and of bananas are simply deformations of "Brisbane" or of other place-names in Queensland whence they originated.

In the meantime, commercially-minded Europeans began to survey the resources of the islands' economic flora to find what could be exported. The first venture was the well-known sandalwood (*Santalum* spp.) trade which began around 1815 in Melanesia.

Arrowroot, processed from the tubers of *Tacca leontopetaloides*, citrus fruits gathered from the groves of almost wild trees which were the progeny of Cook's introduction, and molasses from sugar cane, were also among the first sources of cash for the Polynesians, while

<sup>7</sup> Barrau (1959).

at one time yam tubers were exported from Fiji. These are only a few examples of early sales of crops.

Coconut oil was processed in many islands for export. In New Caledonia, around 1855, some European traders built primitive oil factories which are worth describing. In these factories copra was grated and placed in native canoe hulls as containers. These hulls were left in the open on coral sand beaches. The sun's action, plus some fermentation, was sufficient to free the oil, which was then collected, barrelled and exported. What remained of the grated copra was used as pig-feed. The above-described process was nothing more than the traditional Polynesian process. Needless to say, the oil thus produced was not very clean and it soon became obvious that sun-dried copra was a far better produce for export, and it therefore gradually superseded coconut oil for this purpose, as from 1870. Elsewhere, as in Samoa, oil was produced in the same way by the natives themselves, who sold it to the German traders. In the meantime, some of the European-introduced plants were already in cultivation, as in the case of Arabian coffee in New Caledonia.

By the end of the nineteenth century, European traders and planters were already firmly established in all the islands, and a wide range of economic plants had been introduced from other tropical areas.

#### FROM EUROPEAN PLANTATION AGRICULTURE TO ISLANDERS' CASH-CROPPING

The result in general of Western impact has been to disrupt the closed economies of Island life and to expose the natives to the influences and requirements of European markets. With the acceptance of Western values, new wants were created. The expansion of trade for sandalwood, coconut oil, copra, and other products furthered this process of increasing cash-consciousness among Pacific Island peoples.

This process was accelerated by numerous European ventures in the latter part of the nineteenth century. Coconut plantations were established, whereas previously nuts were gathered from existing groves for the purpose of oil or copra making. On many "high islands" European planters began export production of introduced crops such as coffee, cocoa, and various rubber-yielding trees. Sugar cane was grown commercially in some territories; an example is New Caledonia where four rum factories were in operation about 1870. Rice growing was also undertaken, while several attempts were made to develop cotton as a cash crop.

Amongst these attempts, one in the Fiji islands is worth mentioning. In 1860 the British government decided to investigate the agricultural possibilities of this group and sent a botanist, Berthold Seeman, there for this purpose. It was indeed a successful mission, for it resulted in

the publication of the outstanding *Flora Vitiensis* and also in an enthusiastic report on the suitability of the islands for cotton growing. So optimistic was Seeman and so high his opinion of Fiji for this purpose, that Britain decided to annex the group. In those far-off days, governments took notice of what botanists had to say!

In the beginning, the Europeans, with a few exceptions, had not a very high opinion of the Pacific Islanders as farmers. Their traditional system of bush-fallow subsistence horticulture was regarded as wasteful of land and as being of no economic value. Certainly it was ill-adapted to the needs of European commercial agriculture and under these conditions a policy of developing European settlements and plantations emerged. The settlement of New Caledonia is a result of such a policy.

It has already been mentioned that coffee was among the various tropical plants introduced into this island by the Europeans. Soon after New Caledonia was annexed by France in 1853, the Catholic Mission successfully undertook to grow coffee and the first exports, amounting to some fifteen tons, were sent to Sydney in 1863. However, at that stage, many other cash crops were being developed. It was only at the end of the nineteenth century that the then Governor Feillet decided to launch an ambitious European settlement and agricultural development scheme, based largely on coffee growing.

As in the case of many other territories in the tropical Pacific, this development scheme was only concerned with European ventures. In those old colonial days, it was frequently and openly stated that the New Caledonian natives were fast disappearing and would soon become practically extinct, as in the case of the Australian aborigines. This depopulation was indeed well on the way in the latter decades of the nineteenth century. Accompanying the debilitating effects to the Island populations were the insidious but no less shattering effects of the clash of cultures. Not until after the initial stages of culture contact did the natives' acquisition of new economic ideas lead to a reorientation of agricultural objectives. When they did undertake cash cropping, it was natural that this cropping should be based initially on those crops that were native to the Islands, and of these the coconut palm was by far the most important.

The beginning of native commercial agriculture thus represented a reorientation of existing agricultural practices rather than the introduction of entirely new practices. Native cultivation of crops introduced by the Europeans themselves involved a far greater agricultural revolution, and this has been a much slower process, which has only begun to make great strides in recent years. Nevertheless, as early as the mid-nineteenth century, some native villages were trying, with the help of missionaries and sympathetic well-wishers, to develop some form of cash farming. Thus, in New Caledonia, the naturalist Vicillard in 1863

successfully encouraged the Melanesians of one village, Wagap, to grow tobacco, but unfortunately initiative of this kind was sporadic.

The natives were considered useful only as indentured labourers for the European plantations. Working there, they learned on their own initiative how to grow coffee and process the berries. From the European plantations, they brought coffee seedlings into their reserves and planted

TABLE 1  
Market-Oriented Production of Indigenous and Introduced Crops  
in South Pacific Territories c. 1958

(Unless otherwise stated, production figures are in tons)

TERRITORY	INDIGENOUS CROPS		INTRODUCED CROPS	
	TYPE	PRODUCTION	TYPE	PRODUCTION
Australian New Guinea	Coconuts	85,000	Coffee	379
Papua	Coconuts	13,233	Cocoa	4,000
			Rubber	4,259
			Coffee	3
			Cocoa	45
New Caledonia and Loyalty Islands	Coconuts	1,499	Coffee	2,206
Fiji	Coconuts	22,445	Sugar	191,833
			Bananas (cases)	148,604
New Hebrides	Coconuts	33,840	Cocoa	856
			Coffee	278
Solomon Is. Protectorate	Coconuts	20,868		
Western Samoa	Coconuts	14,325	Cocoa	4,034
			Bananas (cases)	884,555
Tonga	Coconuts	27,332	Bananas (cases)	158,595
French Polynesia	Coconuts	22,198	Vanilla	177

them around their villages. There was, however, no large development of native coffee plantations and the decline of native population continued steadily.

From 1920 on, Captain Harrel, an officer of the French Gendarmerie in charge of the Native Affairs Department, and in 1931, his successor, Captain Meunier, anxious to stop the decline of the New Caledonian native population, launched an energetic campaign to improve living conditions in the villages. Housing was improved, medical care intensified, and coffee growing was made compulsory on the reserves. It goes without saying that many European planters were not very enthusiastic about this progressive and successful policy. Today, 1,500 tons of coffee are exported to France from New Caledonia, the larger part of this export being native-grown.

Changes of this kind took place in many South Pacific islands. The table above gives an indication of the relative importance of introduced crops in the export production of both European and native groups in some of the Island Territories of the Pacific.

The extension of coffee plantations on native lands resulted in appreciable changes in the traditional subsistence horticulture. There was competition for land and labour between the bush-fallowing gardens and the perennial coffee plantations; the result was that a more sedentary type of subsistence gardening appeared, based not only on some varieties of the traditional food plants but also on introduced species such as the *yautia* (*Xanthosoma sagittifolium*) and cassava (*Manihot utilissima*), which were more easily grown. Modern garden tools replaced the old digging sticks, and today fertilisers are beginning to be used in the gardens of some villages.

#### CONCLUSION

The above historical sketch and table give an idea of the role of plant introduction in the economic development of the Pacific Islands in relation to their economic development.

The South Pacific Commission has had plant introduction on its programme since its inception, and since 1957 it has introduced and distributed in the various Pacific Territories more than 250 species and varieties of economic plants. It has thus continued, and indeed accelerated, the revolution in the economy of the island world initiated by the European introduction of new food plants from the seventeenth century onwards.

## REFERENCES

- Barrau, J., 1957, *Les plantes alimentaires de l'Océanie, origines, distribution et usages*, Marseilles.
- , 1958, "Subsistence Agriculture in Melanesia", *Bernice P. Bishop Museum Bulletin*, 219, Honolulu.
- , 1959, "L'Agriculture Polynésienne au Contact des Étrangers", *Journal de la Société des Océanistes*, XV, 15 Noumea.
- , and Maclet, J. N., 1959, "Catalogue des Plantes utiles aujourd'hui présentes en Polynésie Française", *Journal d'Agriculture Tropicale et de Botanique Appliquée*, VI, 1, 2 and 3.
- , (in press) "Subsistence Agriculture in Polynesia and Micronesia", *Bernice P. Bishop Museum Bulletin*, Honolulu.
- Heyerdahl, T., 1952, *American Indians in the Pacific*, Oslo and Stockholm.
- Merrill, E. D., 1954, "The Botany of Cook's Voyages", *Chronica Botanica*, Waltham.
- Safford, W. E., 1910, *The Useful Plants of Guam*, Washington.
- Vavilov, N. I., 1949-50, "The Origin, Variation, Immunity and Breeding of Cultivated Plants", *Chronica Botanica*, Waltham.

## SOURCES FOR TABLE

- Robson, R. W. (ed.), *Pacific Islands Yearbook*, Sydney.
- Spate, O. H. K., *The Fijian People: Economic Problems and Prospects*, Fiji, 1959.
- Wright, A. C. S. and Twyford, I. T., *The Soil Resources of Fiji*, Suva (in press).
- Annual Reports for Western Samoa, Cook, Niue and Tokelau Islands, N.Z. Government, Wellington.



# The Changing Face of Rural China

KEITH BUCHANAN

"Le visage même de la Chine, la face du pays, est en train de changer à une vitesse vertigineuse."

René Dumont<sup>1</sup>

IT has long been customary among writers on the social and economic development of Chinese rural life to emphasise the static, changeless, quality of the rural scene. Belden, in his vivid account of the background to revolution in China, stressed this point:

"Agriculture, for forty centuries the unchanged basis for development, advanced by intensive means, becoming not farming but gardening. Condemned by unbroken memories and practices of four thousand years, these ancient people brought with them into modern times an intolerably heavy burden from the past."<sup>2</sup>

Recent work, however, and especially the work of Professor Ping-ti Ho, has shown that Chinese agriculture has been far from static over the last two millenia; major technological changes, in the shape of the introduction of new crops, have taken place from time to time and these have produced significant changes in the rural landscape. The early-maturing rices, introduced at the beginning of the eleventh century, helped ensure the success of double-cropping, made possible the utilisation of the higher land and slopes and provided the economic basis for a great expansion of population in south China.<sup>3</sup> Wheat, millets, and other dry land crops spread widely in the rice region during the Sung Period (970–1279 A.D.), making possible the utilisation of formerly marginal areas.<sup>4</sup> Finally, from 1550 onwards the spread of American crops—maize, sweet potatoes, Irish potatoes and peanuts—made possible the intensive settlement of the upland country of central and south China and the sandy loam terrains unsuited to rice. This last agricultural revolution is still continuing.<sup>5</sup>

These revolutions resulted in important changes in the Chinese rural scene. They were, however, regional or local rather than national in their impact and they did not greatly touch the social conditions under which agriculture was carried on. In this respect they contrast strikingly

*Keith Buchanan is Professor of Geography at the Victoria University of Wellington.*

<sup>1</sup> Dumont (1959): 51.

<sup>2</sup> Belden (1952): 135–136.

<sup>3</sup> Ping-ti Ho (1959): 173–176.

<sup>4</sup> Ping-ti Ho (1959): 176–183.

<sup>5</sup> Ping-ti Ho (1959): 184–189.

with the revolution in the Chinese countryside initiated when the Communists came to power a decade ago. This latest revolution has affected all areas of the country; it has resulted in a far-reaching transformation of the physical and biological environments; it has brought about a restructuring of rural society and has created new relations between agriculture and industry. It is the purpose of this article to describe briefly the origins of this latest revolution, its stages of development, its manifestations in the Chinese countryside and some of the features of the new rural society which made its achievements possible.

#### POINT OF DEPARTURE

The basic features of rural life in old China, above all, its corroding poverty and hopelessness, have been described by many writers, perhaps most graphically by novelists such as Pearl Buck<sup>6</sup> or Evan King.<sup>7</sup> Sharper statistical focus is given by René Dumont's careful sample studies of a series of Chinese communities.<sup>8</sup> These studies provide an objective picture of the weaknesses and problems of the traditional rural society and indicate clearly the main factors responsible for the poverty and hopelessness of the peasantry. Especially significant, in the light of recent developments, is his opinion that even more destructive than the general poverty was the progressive deterioration of conditions; this deterioration,

"... was taking away all hope and was leading to revolt. China exported less and less silk and tea and the production of foodstuffs failed to keep pace with the growth of population. Impoverishment accentuated exploitation: the situation was becoming fatally explosive. . . ."<sup>9</sup>

The general character of rural China's problems can be illustrated by Dumont's data for a sample north Kiangsu community; the data is given below:

	Families	Arable land	Buffaloes
Landlords	12	441 ha	45
Rich peasants	45	24 ha	
Middle peasants	11	6.4 ha	26
Poor peasants and wage earners*	845	—	3

\* Including 314 middle peasant families without land.

TOTAL	913	471 ha	74
-------	-----	--------	----

Source: Dumont (1957A): 30-31.

The total population supported by the community's 471 hectares of arable land was 3,936; the "nutrition density" was thus 837 per square kilometre or almost 2,200 per square mile. Ninety-three per cent of

<sup>6</sup> Especially *The Good Earth*, New York, 1931.

<sup>7</sup> *Children of the Black-haired People*, London, 1957.

<sup>8</sup> Dumont (1957A).

<sup>9</sup> Dumont (1957A): 33.



the arable land was, however, in the hands of a dozen landlords and the great mass of the population existed by renting tiny plots of land. Rents were exorbitant—forty-three per cent of the value of a normal year's harvest—and even if crops were ruined by flood the rents were still due. Because of high rents, forty hectares remained uncultivated, in spite of population pressure and hunger. The poverty of the peasant meant that equipment was poor, manuring inadequate and cultivation ineffective; the rich peasant achieved yields of thirty-eight quintals to the hectare while the poorer peasant on a contiguous plot attained only twenty-one quintals. Productivity was, moreover, falling; in the words of a villager: "In normal times only the men stooped to harvest but now, with the rice starved of manure, even the children must bend their backs."<sup>10</sup> The equilibrium between population and food supply "poised always on the knife edge of starvation" was becoming increasingly precarious. It could be shattered by drought or flood. Floods reduced more than one quarter of the entire population to beggary and the great floods of 1931 left a bitter legacy of peasant indebtedness and land concentration.

Here, in a single community, are presented in sharp focus the basic agrarian problems China has tackled in the past decade: the uneven distribution of land, the exploitation of the peasant masses, the institutional barriers, in the shape of poverty and high rents, to increased productivity or even full use of the land, and the vulnerability of a backward, poverty-stricken, society to natural calamities such as flood or drought. The massive changes in the landscape of rural China are the expression of the Chinese people's determination to solve these problems and create a new "world of plenty".

#### CO-OPERATIVES, COMMUNES AND CADRES

Agriculture in old China suffered from two sets of problems: firstly, there were the limitations of the physical environment—soil poverty, shortness of growing season in the north, and natural calamities such as flood, drought, or locusts; secondly, there were the social and economic problems—the instability and ineffectiveness of the Central Government and a landholding system which exposed the peasant to ruthless exploitation. The two groups of problems were interrelated since the first group of problems, whose solution called for a technological revolution, could not be tackled until a satisfactory institutional framework had been provided. There is an obvious parallel with eighteenth century Britain where the new techniques of the Agricultural Revolution could not be widely applied until enclosure created the appropriate institutional framework.

<sup>10</sup> Paraphrased from Dumont (1957A): 31.

Land reform, giving the land to the tiller, initiated the social revolution in the Chinese countryside. The development of co-operatives resulted in more economical units of management and helped to remove some of the social and economic barriers to expanding productivity. For some purposes, such as flood control or major development projects, the co-operative was still too small a unit. Consequently, in 1958 the co-operatives were merged into a series of giant communes, often coextensive with a single county, and whose administrative personnel merged with that of the county. The transition from a system of co-operatives to one of communes was rapid; it began in the middle of 1958 and by late autumn of that year, when the writer was in China, nine-tenths of the peasants had adopted the commune as the basic unit of organisation. Some figures will give this general picture precision: in 1957 the 110 million peasant families of China were organised into 700,000 farm co-operatives; by November 1958 these had merged to form 25,000 Peoples Communes.

Two aspects of this change should be stressed, for these provide a basis for understanding the tremendous pace of change in the countryside. First, because it wiped out landlordism and feudal survivals, the 1949 Revolution was, in a very real sense, a Liberation. It was, moreover, broadly based and carried through with the enthusiastic support of tens of millions of peasant families and it thus helped to destroy the shackling hopelessness and helplessness which impeded peasant progress. As one Chinese writer put it:

"Revolution, land reform and success in co-operative farming have given the peasants a realization of their collective strength; they feel today that they can conquer the fates, the mountains and the rivers, and remake nature."<sup>11</sup>

This new-felt, heady, sense of power is today a major theme of folk art and poetry in China; it provides the psychological drive behind the striking achievements of recent years. The second aspect which should be stressed is the chain-reaction quality of institutional and environmental change; for if social change made possible the shaping of a new environment, so, too, the process of remodelling the environment itself stimulated further change in the institutional pattern. "As men transformed nature their own way of thinking was transformed too."<sup>12</sup> As more ambitious schemes of water conservation or afforestation were initiated, the need for bigger community groupings with bigger resources of capital and manpower became obvious. The co-operative was too small a unit for such schemes—and thus the new commune system was born.<sup>13</sup> It was born in the countryside, from the experience of the

<sup>11</sup> For this changed attitude see "An Outburst of Popular Poetry": *China Reconstructs* (Oct. 1958): 24-26.

<sup>12</sup> Yang Min in *Peking Review*, 21 Oct. 1958: 12.

<sup>13</sup> See Strong (1959).

peasant masses, and not, as many have suggested, imposed arbitrarily on the peasants by an edict from Peking. Only if this "grassroots" origin of the commune system is appreciated can its enthusiastic adoption by the peasants through the length and breadth of China be understood.

The typical commune may contain scores of villages, even small towns, and its average population, from the figures quoted above, is of the order of 20,000 people. Given the great diversity of agricultural systems in China, it is, however, obvious that there will be a wide variation in area, population and intensity of land use. This variation is illustrated by the outline details for four communes given below.<sup>14</sup>

1. Commune near Peking: Population 22,500 households, of which 9,000 are peasant households, grouped in 129 villages, area 10,000 acres. Formed by merging of 8 co-operatives. Emphasis on vegetable growing, including glass-house cultivation. 14 Tractors.
2. Commune near Lanchow: Population 3,000 households. Emphasis on irrigated production of vegetables and fruit, with some wheat and maize. Stock includes 4,000 pigs, 3,000 sheep, 110 milch cows (an innovation), 20,000 poultry and 70 hives of bees. 5 tractors, 1 lorry. Commune runs 12 primary schools, 1 middle school and a veterinary school.
3. Commune near Chengtu: Population 14,500 households. 18,000 acres under crops, mainly rice, with wheat, vegetables, tobacco, potatoes and hemp. Live-stock includes 35,000 pigs, 2,000 oxen. Commune possesses 5 tractors, and runs a wide range of industries such as woodworking and alkali manufacture. It runs 286 dining halls, 282 nurseries, 119 kindergartens and 39 primary schools.
4. Minority (Yi) Commune, near Kunming: Population 4,800 families. 9,000 acres of land, one-third irrigated lowland, two-thirds hill land. Stock 4,000 buffalo and oxen, 6,300 sheep, 10,500 pigs. The commune runs 21 native-style blast furnaces, turning out some 20 tons of pig iron weekly; 20 brick kilns; limekilns; and woodworking industries including simple agricultural machinery.

The administrative and ideological significance of the commune has been commented on by the Indian economist D. D. Kosambi; with the development of the commune:

"The state mechanism has begun to wither away. Control over people has been replaced by the people's control over things . . . the Chinese people have been the first to take this great step towards the real beginning of human history."<sup>15</sup>

If Kosambi's interpretation is correct, this is indeed a major achievement. More important in the present context, however, is the contribution of the commune system to the accelerating economic advance of the last eighteen months. The commune possesses, as suggested above, resources of capital and manpower which enable it to undertake large-scale development projects, and to cope with crises, such as the floods and droughts of 1959, which would have overwhelmed the individual farmer or even the individual co-operative. It provides the institutional

<sup>14</sup> Field data collected by the writer in October-November, 1958.

<sup>15</sup> Kosambi in Huberman and Sweezy (1959): 8.

framework within which the cadres and the peasant masses can apply improved farming techniques and lay the foundations of a widely-dispersed rural industry. As a social unit organising education and welfare services, its schools and technical institutes make possible the marriage of modern science and traditional peasant wisdom and their application to the basic problems of rural development; its canteens and laundries and communal grain mills release tens of millions of women from the tasks of grinding grain, carrying water and cooking under primitive conditions for productive labour in its fields or its factories. These very real social and economic advantages of the commune, together with its "grassroots" origin, help to explain the swiftness and the ease with which the peasantry carried out "this second revolutionary advance in ten years".<sup>16</sup>

It is usual in geographical studies to avoid discussion of purely political matters. In states with a "liberal democratic" pattern this is defensible, since much of the economic life lies, by definition, outside the control of the state. In socialist-type countries, by contrast, the state plays a direct role in guiding and controlling economic development; without such control, it is held, the state would have only an illusion of power. For this reason, it is impossible to understand the changing geography of China without reference to the role and character of the Chinese Communist Party. China's rural transformation would have been impossible without an energetic direction of all social and economic forces, based on a clear awareness of the possibilities of development and of the interrelations of various sectors of the development plan. Such planning cannot be imposed from above but must spring from an awareness on the part of the people as a whole. In this context the Communist Party has played a vital role. As one French observer has put it:

"It is through it that the millions of bits of elementary information 'rise' which, at every moment, make the estimation possible of various courses; it is within the Party that conclusions and a line of development emerge; it is also through the medium of the Party that the conclusions and ensuing directives make their way in a clear and precise way to the masses, who alone can transform a correct theoretical vision into effective practice."<sup>17</sup>

The Party's role has been strengthened by the existence of a core of cadres, springing from the peasantry and tempered by long years of war, who have played a vital role in the country's renaissance. They have guided and shared the experience of the peasant masses; they have patiently explained and reasoned with the peasantry; they have swept aside old prejudices and liberated the powerful productive forces that are rapidly transforming the face of rural China.<sup>18</sup>

<sup>16</sup> Kosambi op. cit: 5.

<sup>17</sup> C. Bettelheim in Huberman and Sweezy (1959): 33-34.

<sup>18</sup> On the "new rural élite" see Dumont (1957A): 389-391.

## TURNING LABOUR INTO CAPITAL

One of the major changes in the Chinese scene during the past decade has been the re-evaluation of the country's "population problem". Traditionally China has been regarded as an overpopulated country and her massive and expanding population as a "burden". Today, the very size of this population is one of the major factors in the rapid economic development of the country and in the sweeping transformation of the rural landscape. The population has become, to quote Bettelheim,<sup>19</sup> "an enormous source of capital accumulation, (devoting) part of its labour . . . to the increase of the productive potential of the country". It is the great density of China's rural population that has made possible the extension of irrigation works and of flood control schemes, the terracing and afforestation and the widely dispersed rural industries, all of which add greatly to this productive potential.

The enormous latent productivity represented by the underemployed masses of Asia was stressed by Dumont; his view, expressed originally in 1954, has a prophetic quality:

"Monsoon Asia's greatest source of wealth is her huge population. The main cause of her backwardness is the inefficient employment of this labour force. . . . Even without modern equipment, the resumption of certain types of work by the peasants during the seasons of underemployment on the land would represent a net gain and a productive exploitation of a natural source of wealth. Applied to large schemes of irrigation, drainage and flood control, this work would rapidly raise the level of food production and increase the amount of work which could be performed by a better-fed labour force the following year; the ascending spiral of production would definitely have begun."<sup>20</sup>

The degree of underemployment is evident from Dumont's sample studies; they showed that the peasant was working in the fields for an average of fifty to 250 days, according to region.<sup>21</sup> In some areas:

"The poor peasants' former winter idleness had not been wholly due to lack of working capital. It was, to a considerable extent, a means of burning up less energy—and food—and the reclamation of waste . . . demanded a degree of stamina which an empty stomach could not provide."<sup>22</sup>

The peasant, in short, was the victim of a vicious circle in which poverty bred inefficient farming and this, in turn, more poverty.

The tapping of the immense reservoir of underemployed labour presented major problems. Much of it was of a seasonal character yet this seasonal variation did not mean that over the slack period fewer men were working but rather that most of them were working fewer hours per day. The surplus labour, under these conditions, could not readily be invested in capital formation. Before this labour surplus could be so

<sup>19</sup> Bettelheim in Huberman and Sweezy (1959): 20.

<sup>20</sup> Dumont (1957B): 162-163 (the original French edition appeared in 1954).

<sup>21</sup> Dumont (1957A): 356-357.

<sup>22</sup> Crook (1959): 71.



utilised, a radical reshaping of the institutional pattern was essential. It is in this context that the development of the co-operative and the commune was so important for these made possible the beginnings of a rational use of labour.<sup>23</sup> Farm work could be attended to by fewer workers, working full time, and with some specialisation, and the labour of the remainder was made available, if only seasonally, for long-term improvements such as irrigation, terracing, or the creation of rural industries, all of which represented increases in the productive potential of the countryside. By 1958 this underemployment had been wiped out; C. Bettelheim estimated that the average peasant worked over 300 days a year<sup>24</sup> and electrification and mechanisation were being pursued as solutions to the growing labour shortage.

The developments made possible by this massive investment of labour fall into five broad categories:

- Irrigation and flood control
- Afforestation and desert control schemes
- Elimination of pests and diseases
- Intensification of agriculture
- Rural industrialisation

These various developments are briefly outlined below.

#### TOWARDS THE ELIMINATION OF DROUGHT AND FLOOD

Among the factors responsible for poverty and suffering in Old China drought and flood ranked high. They impinged on a peasantry which lived always close to the margin of existence, which possessed few accumulated reserves, and which was isolated by a primitive transport system. They depopulated vast areas, reducing the survivors to debt bondage and cannibalism. Drought was the cause of the greatest famines; the 1877–1878 famine on the loess plateau resulted in between nine and thirteen million deaths, and was equalled by that of 1928 which caused three million deaths in Shensi alone. Floods became more frequent as increased run-off and silting of rivers followed the deforestation and agricultural colonisation of the uplands. The 1931 Yangtse floods rendered twelve million homeless, those of 1935 affected fourteen million people; the breaking of the Yellow River dikes in a desperate attempt to stem the Japanese advance in 1938 resulted in some 890,000

<sup>23</sup> On this see Gill in Huberman and Sweezy (1959): 48–49. Gill observes: "To release surplus manpower for capital formation, seasonal underemployment . . . has to be converted into seasonal unemployment. That, in turn, requires that farming should be transformed from small-scale unorganised activity into large-scale organised enterprise" p. 49.

<sup>24</sup> Bettelheim in Huberman and Sweezy (1959): 23.

deaths.<sup>25</sup> The elimination of these catastrophes by the extension of irrigation and by river control schemes would make an obvious and major contribution to the stabilisation and improvement of peasant living levels. Such a programme became possible with the establishment of a strong central government; its rapid implementation was assisted by the restructuring of Chinese rural society and, above all, by the development of the commune.

By 1949, and as a result of some three millenia of development, China had fifty-three million acres of irrigated land. By 1955-56 this had risen to sixty-six million acres. In the next year a further twenty million acres were added to the irrigated area, then, in the winter of 1957-58, a further eighty million acres.<sup>26</sup> In eighteen months China brought more land under irrigation than in the whole of her earlier history. At the end of 1958 sixty per cent of the cropland was irrigated; preliminary plans for 1959 aimed at increasing the irrigated area to some 250 million acres or eighty-nine per cent of the cropland, while by the end of 1960 virtually the entire cropped area will be under irrigation. These figures indicate clearly the scale on which labour has been invested in a systematic policy of stabilising and improving the productive capacity of peasant society.

The official policy for water conservation is described as a "three-pronged" one:

"Build mainly small projects, supplemented by medium and large ones where necessary and feasible; try to accumulate rather than divert water; rely on the people rather than on the government."<sup>27</sup>

The great proliferation of small-scale projects strikes the traveller all over China, and especially in the south; seen from the air the countryside of Kwangsi and Kwangtung glitter with countless man-made water surfaces. The projects take many forms, according to the nature of the terrain, ranging from the combination of drainage and water storage which has made possible the utilisation of the waterlogged lowlands around Tientsin, to the "water melon" system of irrigation and water storage developed in the dry uplands of the northwest of Hupeh Province. One of the most complex systems was that devised for the North Huai Plain. This area, which supports some 12 million people, has always been a problem area; it "suffered from big floods when there was heavy rain, small floods when the rainfall was low, and drought when there was no rain". Its problems have been solved by the creation of a complex network of canals, totalling some 85,000 miles

<sup>25</sup> Ping-ti Ho (1959): 227-236.

<sup>26</sup> It is claimed that irrigation and conservation work over the period from winter 1957 to autumn 1958 involved the handling of 58,000 million cubic metres of earth and stone.

<sup>27</sup> *China Reconstructs* (May 1959): 17.

in length; within this canal mesh are interspersed wells and storage ponds, partly nourished by underground water from North China. Today:

"The entire plain . . . is a reservoir regulated to prevent both flood and drought. Sluice-gates have been built at all important water junctions so that irrigation is ensured even if there should be no rain. . . . The effectiveness of this system against drought was well tested in 1958, a year when there were 270 days without rain. The average yield of rice for the whole area was . . . half as much again as the previous year, when the weather was favourable."<sup>28</sup>

The smaller projects are constructed by the commune which thus invest the formerly under-utilised labour potential of the peasant in increasing the productive capacity of the countryside. Such a policy means that the Central Government's funds can be devoted to larger multi-purpose projects; thus, while Government expenditure on water conservancy in 1958 was as large as the total expenditure over the First Five Year Plan, the total constructional work done in this field was eight times that achieved over the earlier period.

These smaller projects are important in their own right as helping to expand crop output and reduce or eliminate the catastrophic impact of drought or flood. They are, at the same time, vital elements in a boldly-conceived and nation-wide programme of water conservancy:

"Built along the course of a river above a big project, the small projects enable water to be retained for irrigation, reduce the volume of run-off and thus lessen the pressure on the big project. Those built below the big project make it possible again to store water discharged from the power station and use it for irrigation. Thus a complete system is formed of big and small reservoirs connected by the main river, its tributaries and canals."<sup>29</sup>

The pattern of major water conservancy works is shown in Fig. 1; it should be stressed that the effectiveness of these projects is intimately bound up with the increasing control over run-off and soil loss in the upland country of the west and south made possible by local water conservancy schemes, terracing and afforestation.

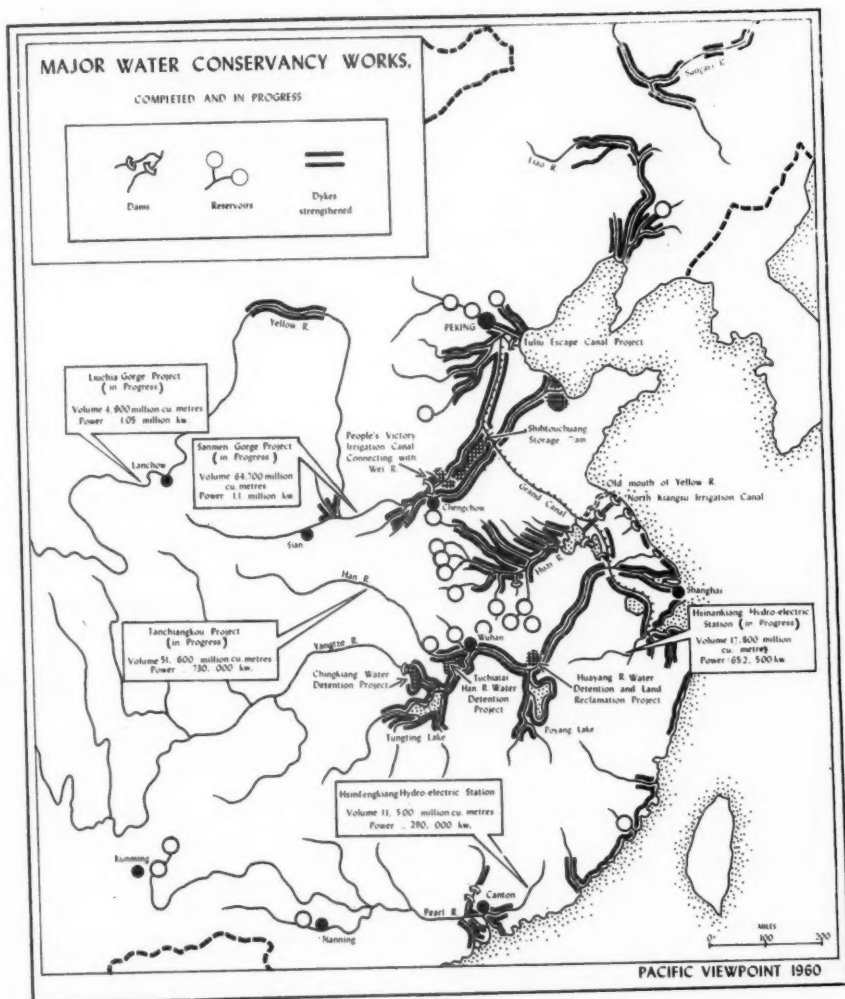
The most advanced multi-purpose scheme is that for the control of the Yellow River.<sup>30</sup> Earlier schemes had attempted to cope with the problem of flooding by construction of embankments on its lower reaches. Such a policy was obviously useless for it did nothing to reduce the heavy run-off and silting due to deforestation and destructive cropping in its middle reaches. After 1949 a comprehensive plan for the Yellow River basin was worked out. It envisages the transformation of the main channel into a "water staircase" by the construction of forty-six dams, to be used for flood prevention, irrigation and power, and

<sup>28</sup> *China Reconstructs* (Feb. 1959): 23.

<sup>29</sup> *China Reconstructs* (Aug. 1959): 4.

<sup>30</sup> Teng Tse-hui (1955).





the application of soil and water conservation techniques to halt erosion of the loess country through which the river flows in its middle-reaches.<sup>31</sup> This is a long-term project, the first stage being scheduled for completion in 1967. To date, five dams on the main river and four on its tributaries are under construction, among them the giant Liuchia Gorge and Sanmen Gorge projects, and by autumn 1958 some 200,000 square kilometres of eroded land had been rehabilitated.<sup>32</sup>

Even more ambitious is the proposed redistribution of China's water resources by diverting the surplus water from the Yangtse northwards into the Yellow River drainage basin. It is estimated that each year some 142,000 million cubic metres of water could be diverted northwards and survey teams are now carrying out a first investigation of possible canal routes through the watershed between the two rivers. The linking of the two river systems, following the present expansion of the irrigation network, should finally solve North China's water problem.

It is probably premature to attempt to assess the full significance of official claims of achievements in the field of irrigation and flood control; to take one example, it appears that part at least of the area classed as newly irrigated would be more accurately classed as "*capable of irrigation by newly-constructed works*".<sup>33</sup> Nevertheless, the unprecedented floods and droughts that afflicted parts of China in 1959 subjected both the commune system and the irrigation and flood control systems to a severe test. A total of eighty-five million acres (almost one-third of the cultivated area) was affected by flood, drought or insect pests. Of the fifty-four million acres which suffered from prolonged drought, thirty-three million acres were irrigated "to varying degrees"; in some areas, such as Anhwei, recently-built reservoirs made it possible to store the spring rains and, in spite of summer drought, to increase the area under late-sown rice. In central China, heavy July rains caused a rapid rise of the Yellow River but the flow was reduced by the Sanmen Gorge Reservoir which contained some two hundred million cubic metres of water and the dykes in the lower valley held.<sup>34</sup> In south

<sup>31</sup> Nine-tenths of the Yellow River's silt appears to originate in Kansu, Shensi and Shansi Provinces: Teng Tse-hui (1955): 25.

<sup>32</sup> *Peking Review* (22 Dec. 1959): 14-17. According to this report almost twelve million acres of land in the lower valley of the Yellow River were brought under irrigation in 1959.

<sup>33</sup> Chou En-lai (1959): 20. According to Chou En-lai's figures, China's water conservancy works "can irrigate some 166 million acres"; of this, eighty-three million acres can benefit fully and fifty million acres derive partial benefit. The remaining thirty-three million acres "can benefit . . . when the land is levelled and irrigation ditches built".

<sup>34</sup> On 22 July 1959, flood waters poured into the reservoir at the rate of 12,800 cubic metres per second; the flow at Chengchow on the 24th did not exceed 6,000 metres as compared with 10,000 in other flood years.



Photo: Keith Buchanan

Fig. 2. Contour-terracing of bare hillsides prior to afforestation, Lanchow, Kansu.  
Trees being planted were mainly deciduous types, including fruit trees.

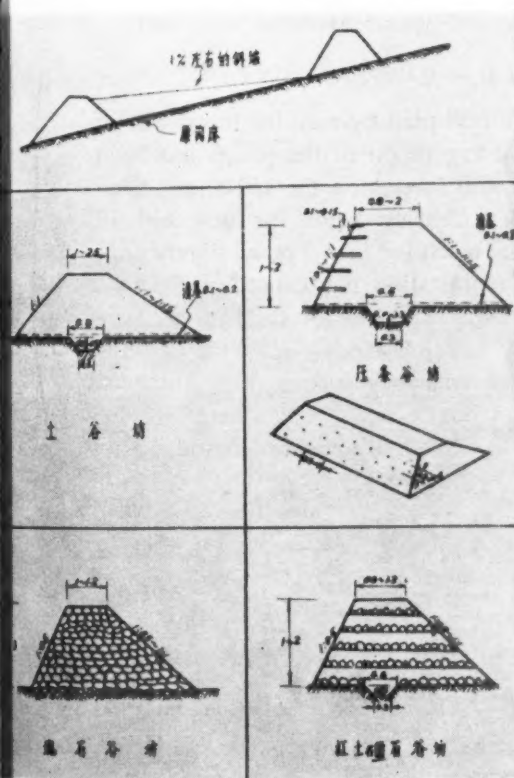


Fig. 3. Gully control by use of small earth and stone dams. Sample page from *Bulletin on Soil and Water Conservation in the Middle Reaches of the Yellow River* (in Chinese), Peking, 1958.

China exceptionally concentrated June rains (578 mm between 11 and 14 June), coinciding with high spring tides, threatened a major crisis; water levels in the Pearl River delta were twenty to forty cm above those of 1915 which saw the worst flood in living memory. Flooding was severe along the East River but loss of life and property was kept to a minimum by flood-prevention work and organised evacuation of danger areas. The completion this year of the Hsinfengkiang Reservoir, which will control forty per cent of the water in the upper reaches of the East River, should finally eliminate the danger of flooding in this valley. In the Pearl River delta the recently-strengthened Great Northern Dyke effectively protected the city of Canton and only 1.3 per cent of the fertile delta area was flooded.<sup>35</sup>

The events of 1959 suggest that, even if China has not yet achieved complete mastery over the twin menaces of drought and flood, they are no longer the "catastrophic deterrents" they have been in the past. Efficient organisation at both the local and Central Government levels, coupled with careful integration of locally and centrally executed schemes of irrigation and flood control, have introduced a new security into peasant life and largely removed two of the major factors making for peasant poverty.

#### TURNING THE WHOLE COUNTRY GREEN

The Chinese living-space has been occupied by men for thousands of years. Over the centuries the natural vegetation of the plains has been cleared to make way for crop-land; the forests on the hills have been relentlessly destroyed by the farmer clearing fields for new upland crops<sup>36</sup>, or as a result of the unceasing quest for fuel. Today, barely one-tenth of the country is forested. Deforestation has caused a shortage of fuel and constructional timber; even more important has been its deleterious effect on the country's river regimes. Because of the obvious advantages of afforestation there has been a vigorous programme of tree-planting, with the slogan "Make China Green". The area afforested during the First Five Year Plan was 28.2 million acres, made up as follows:

Type of Planting	Million acres
Timber	12.9
Industrial trees <sup>37</sup>	5.4
Shelter-belts	3.7
For soil and water conservation	3.5
Miscellaneous	2.7
TOTAL	28.2

Source: *Peking Review*, 22 April 1958: 15.

<sup>35</sup> *China Reconstructs* (Sept. 1959): 16-18.

<sup>36</sup> Ping-ti Ho (1959).

<sup>37</sup> These include tung, tea-oil and camphor south of the Yangtse, and rubber, coconut and coffee in the subtropical south. Dumont (1957): 26, comments on the importance of this tropical fringe to the socialist bloc.



Photo: Keith Buchanan

Fig. 4. View southwards from the Great Wall, showing beginnings of afforestation using pit or "fishscale" technique (note pitting of slope on right foreground). Trees established are mainly deciduous types, including poplar and willow.



Fig. 5. "Fishscale" pits on hillside, showing details of construction and layout. The pits are here used for millet. Sample page from *Bulletin on Soil and Water Conservation in the Middle Reaches of the Yellow River* (in Chinese), Peking, 1958.



In 1958 a nation-wide drive resulted in the afforestation of sixty-nine million acres; in addition, some 30,000 million trees were planted around villages and along roads and river banks. By April 1959 a further thirty-nine million acres had been planted; within fifteen months, in short, an area almost as large as France was afforested. The target for 1968 is to bring 500 million acres, or twenty per cent of the area of China, under forests.

These achievements have been made possible only by massive investment of labour; on some communes up to fifty per cent of the labour force was seasonally occupied in this work, with each person planting up to 1,600 trees (Chingtu county in semi-arid Kansu).<sup>38</sup> Preparatory work has included elaborate terracing as in Kansu while the "fish-scale" method of planting two to three trees in closely spaced semicircular ditches which intercept run-off has been widely used on rough terrain as near the Great Wall. The emphasis has been on the use of quick growing trees such as willow, *Ailanthus*, eucalypt, poplar and bamboo, though fruit trees may be planted and in some areas (e.g., Kiangsu) the "scale pits" are planted also with sweet potatoes and pumpkins, occasionally even with roses.<sup>39</sup>

Seen from the air, these plantings spread a mist of green over the bare hills of south and west China; they emphasise the remarkable transformation of the vegetation cover which has been accomplished in less than a decade. Equally striking are the shelter belts which form gridded patterns on the plain of north China. Even larger scale shelter belt projects have been undertaken in outer China and along the margins of the Gobi a new "Great Wall" of trees, one thousand miles long and a mile wide, is arresting the drift of sand and the scorching winds from the interior. A similar shelter belt, occupying some two and a half million acres, was being established in 1959 in the southern part of the Dzungarian Basin; it will protect the important cotton-growing region along the Manass River and the western sector of the Lan-Sin railway.

One-ninth of China, mainly in the northwest, consists of deserts. Basic research into the problems of transforming these regions is being carried out by the Academy of Sciences and extensive programmes of revegetation and irrigation have been initiated. Between 1950 and 1958, 3.3 million acres of desert land were afforested and over four million acres sown with grass. The target for 1959 was to bring six million acres of desert land under control, a programme greatly aided by the use of the aeroplane for sowing of grass seed. Further west, in the Tarim Basin, irrigated agriculture is being expanded along the upper and middle reaches of the Tarim River. It is hoped to reclaim some 1.6 million acres and to develop the area as a major grain- and cotton-

<sup>38</sup> Data supplied by Dr Kuo Yang, Institute of Geography, Chinese Academy of Sciences.

<sup>39</sup> Hanwang in Kiangsu.

growing base in west China. To date some 200,000 acres have been reclaimed; much of this is accounted for by some seventeen State Farms, developed and operated by the construction corps of the Chinese army.

The Chinese claim that "man can not only conquer deserts but utilize them for his benefit"; their achievements in their Far West in transforming the landscape are justifying this claim and providing a wealth of research data<sup>40</sup> and practical knowledge capable of application in desert environments elsewhere in the world.

#### THE FIVE PLAGUES AND THE FOUR PESTS

The remarkable transformation of rural China's biological environment is perhaps less immediately apparent to the traveller than the dramatic remodelling of the physical landscape; it is, however, an equally important factor in the country's economic advance. The conquest of man's parasites and of the diseases they carry and of the parasites of animals and plants is

"... one aspect of the conquest and transformation of Nature, of the cultural revolution which will improve the health of the Chinese people and lift them from their backward condition. This struggle is intimately bound up with the improvement of yields and the development of industry and of agriculture, which can develop only with a healthy population."<sup>41</sup>

The elimination of major diseases, such as malaria and schistosomiasis, and the prevention and cure of diseases such as dysentery, typhoid or tuberculosis, figure prominently in the Twelve Year Plan of agricultural development. This medical emphasis in an agricultural programme would be astonishing in Europe, says Dumont, adding:

"Nevertheless, the elevation of peasant living levels and peasant productivity begins with improved health, in China as in other underdeveloped countries and this is especially true in the tropical zone."<sup>42</sup>

The campaign for better health has moved forward on a broad front—improved sanitation and water supplies in village and town, mass immunisation, large-scale training of rural medical staff and the establishment of village dispensaries—backed by a widespread publicity drive.

The campaign has been directed particularly against the five plagues—malaria, schistosomiasis, kala-azar, filariasis and hookworm. These have always been of major importance in the warm and humid South where they dragged down the efficiency of scores of millions of peasants and killed their scores of thousands annually. Schistosomiasis was pre-

<sup>40</sup> Some of the fields in which investigations are being carried on are summarised by Coching Chu, Vice-President of the Academy of Sciences, in *Peking Review* (29 Dec. 1959): 11–14.

<sup>41</sup> Lambin (1959): 106.

<sup>42</sup> Dumont (1957A): 342.

valent over an area of south China inhabited by 100 million people, of whom ten million were afflicted with the disease. The parasite has a fresh water snail as an intermediate host and the disease is being eliminated by the cleaning of ditches and irrigation channels and by treatment with modern and traditional methods. It has been wiped out in Fukien and Kiangsu and is being eradicated over the rest of south China. Malaria affected five per cent of China's population in 1949; today the figure has dropped to 0.05 per cent and the disease is significant only in the forest and marsh country of western Yunnan. The campaign against filariasis, kala-azar, hookworm and roundworm follows the same pattern:

"A war of patience which mobilises six hundred million people against the parasites, according to a predetermined strategy and as an integral part of the agricultural plan."<sup>43</sup>

Like land reform or the control of flood and drought, this revolution in health is lifting a burden from the shoulders of the peasant masses; it is not only adding to the productive potential of the country but eliminating a major cause of suffering and wasted human lives.

The campaign against the "four pests"—flies, mosquitoes, rats and sparrows<sup>44</sup>—is partly inspired by considerations of hygiene, partly by the heavy toll on the national larder exacted by these pests. The slogans of the anti-pest drive emphasise this aspect: "A rat is nine kilos of grain", "Half the wheat and rice crops of Hunan and Kirin goes to fill the stomachs of sparrows". These campaigns have been described by many travellers.<sup>45</sup> Their remarkable success is due above all to the skill and patience with which rural health workers and cadres have expounded to the villagers the fundamentals of rural hygiene and won the whole-hearted collaboration of 500 million peasants.

#### THE GREATEST AGRICULTURAL ACHIEVEMENT OF THE CENTURY<sup>46</sup>

The great expansion in agricultural production during the last two years has been made possible by the application of the principles set out in the "Eight-Point Charter for Agriculture"; they are: deep ploughing and soil improvement, heavy fertilisation, water conservancy, seed selection, close planting, plant protection, field management and reform of tools. Few of the measures are new but each has acquired new

<sup>43</sup> Lambin (1959): 109.

<sup>44</sup> Han Suyin gives a sensitive account of Peking's anti-sparrow campaign in *The New Yorker* (Oct. 10, 1959): 43-50.

<sup>45</sup> The writer would add his testimony here. In 8,000 miles of travelling in China in autumn 1958 he saw few flies; the Pearl River delta seemed mosquito-free.

<sup>46</sup> The heading is taken from Dumont (1959B).





*Photo: Keith Buchanan*

Fig. 6. Commune territory near Lanchow. Yellow River in the background. Commune includes irrigated orchards and gardens on flood plain and extensive areas of hill country. Level hilltops are cultivated with "shatin" (pebble mulch) techniques; slopes are being terraced and planted with fruit trees.



*Photo: K.N.O.K.S.*

Fig. 7. Cotton harvest on Hungwei Peoples' Commune, Kaotang County, Shantung. Note the large fields which have replaced the former scattered parcels of individual cultivators.



Fig. 8. The "Eight-point Charter for Agriculture".

content as a result of the agricultural experience gained in the past decade.

#### The charter

"... is an entity and its eight points are closely coordinated, one supplementing the other. Neglect of one item may adversely affect the crops as a whole. For instance, deep ploughing without adequate increases in manuring cannot yield rich harvests, while heavy fertilisation without deep ploughing will probably invite crop lodging. The eight measures are not dead formulae but call for flexible application. . . ."<sup>47</sup>

The implementation of the measures set out in the charter has been facilitated by the new institutional framework—the commune—whose rise was described above. The scale of the success achieved is explained, partly by the liberation of the peasant from age-old prejudices and attitudes, a liberation which is expressing itself in a great surge of peasant inventions such as improved tools, new planting techniques, experiments in plant hybridisation and the like; partly by the increasing control over the environment made possible by the great water control and irrigation schemes carried out since 1949.

Of the technical improvements, some, such as the use of improved, higher-yielding, seed strains on seventy per cent of the cropped area, bring an immediate increase in yield without additional labour. Others involve an intensification of labour input per unit area, and this intensification in part explains the cry of shortage of labour. An average application of sixty tons of manure, silt and compost to every acre of cropland makes heavy labour demands in an economy where lorries are still few; the rate is ten times that of 1957—and on trial plots visited up to six hundred tons per acre had been applied. Close planting of rice seedlings, giving densities of up to eleven million ears of rice to the acre, and multiple sowing of crops, are labour-expensive techniques. So, too, is the close attention—the weeding, spraying, watering and supplementary fertilisation—which is given to each plant.<sup>48</sup> It is notable

<sup>47</sup> *Peking Review* (23 June 1959): 11.

<sup>48</sup> An important factor in the control of plant diseases is the elaborate network for gathering information about the appearance and spread of disease and pests. By the end of 1958 "there were 678 forecasting stations, 12,000 information centres, and hundreds of thousands of people gathering information."



密 — Close-planting



藥 — Plant protection



工 — Tools reform



管 — Field management

that mechanisation is still on a small scale, though many of the communes in north China own tractors, and simple equipment, such as irrigation pumps and improved implements, is lightening the burden of peasant toil. Heavy use of artificial fertilisers, which revolutionised Japanese farming, has scarcely begun. Factory output of all artificial fertilisers was 1,375,000 tons in the first six months of 1958; it is increasing and being supplemented by massive quantities of fertilisers produced by "native style" plants on the communes. But even without large-scale mechanisation or heavy use of artificials, the achievements are spectacular enough—for China as a whole grain output increased by thirty-eight per cent in 1958 and total value of agricultural output rose by twenty-five per cent. This is in striking contrast to India where

"The curve for production of food grains appears to be being overtaken by that of population which is increasing at a rate of 1.8 per cent per annum and will soon exceed two per cent. Cereal output is increasing by between one and two per cent per annum."<sup>49</sup>

The wider implications of these changes hardly need stressing. The Chinese peasantry, one-quarter of humanity, are emerging from the corroding poverty of their past. Bowed down for centuries in back-breaking toil, prisoners of a stagnating agricultural system, they are now lifting up their heads and asserting their capacity to dominate their environment, to bend it to their needs. Man in China is now an "ecologic dominant". The eventual outcome is seen by one Chinese writer in the following terms:

"With yield per acre rising sharply, China will gradually reduce the area of land devoted to food crops. Hopei Province has already decided to reduce the cultivated area by a half within two or three years when grain yield per acre is expected to reach six to nine tons. More land will be allocated to forestry, animal husbandry and fisheries. . . . When the per acre yield reaches thirty tons, less than thirty-five million acres will be needed for upkeep of 650 million people. Then the entire country will be transformed into a huge garden."<sup>50</sup>

<sup>49</sup> Dumont (1959B): 55.

<sup>50</sup> The concentration of labour, equipment, fertiliser and irrigation water on what are termed "high-yielding" tracts is an important development. It represents a major step towards the "three-three system" advocated by Mao Tse-tung, under which one-third of the arable land would be cropped, one-third afforested and the rest left fallow. See Yang Min, "Revolution in Farming Methods", in *Peking Review*, 28 October 1958, pp. 8-9, and Wang Hsiang-shu, "The Myth of 'Diminishing Returns'", *Peking Review*, 28 October 1958, pp. 10-12.

It must be admitted that this "brave new world" is not easily reconciled with the traditional picture as presented by J. L. Buck, W. Vogt or, more recently, W. W. Rostow; nevertheless, all the scientists with whom the writer discussed China's food problem were convinced that a solution had at last been found and that, for the measurable future, food production could be expanded to keep well ahead of population growth (2.3 per cent per annum).

Meanwhile, on the communes, increased productivity means a sharp rise in levels of living, a rise expressed in new housing, new school buildings, and the beginnings of investment in producer goods such as tractors. A feature of most villages is the vigorous poster art on the whitewashed walls, exhorting the peasant to ever greater production; such posters are attractive but probably less effective as an incentive to production than the very real evidence of the results of higher productivity which the peasant can see around him in the shape of new schools and housing rising amid the fields of rice or millet.

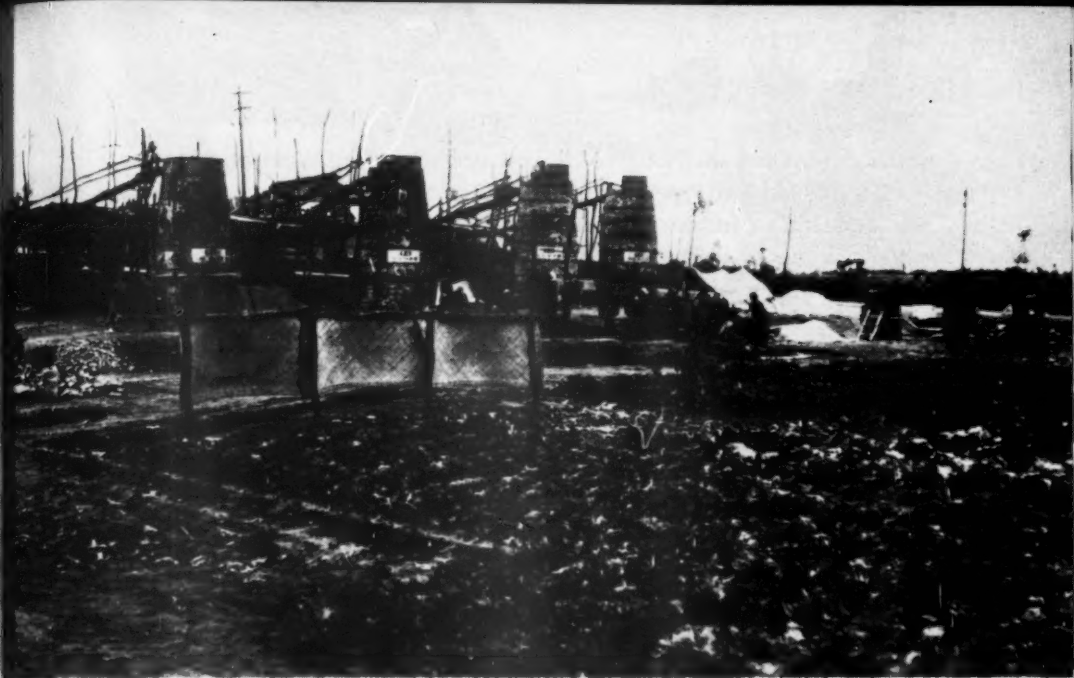
#### A NEW PATTERN OF INDUSTRIALISATION

Much of the poverty of old China was the result of an undiversified economy. Large-scale industrialisation had been hamstrung by the organisation of Chinese society and by the disintegration of Chinese life following the impact of the West. Only in the coastal provinces was there any significant development of modern industry<sup>51</sup> and as late as 1952 almost three-quarters of China's industrial output came from the seven coastal provinces and the cities of Peking, Shanghai and Tientsin. In the interior there was little to relieve the drab and monotonous poverty of a stagnating peasant economy.

The situation in the countryside was dramatically changed as a result of the industrialisation programme of the People's Government. The Five-Year Plans place a heavy emphasis on industry but it is a distinctive emphasis, involving simultaneous development of large-scale and small-scale industry, of modern Western-style industry under Central Government control and "native style" industry under the control of the local authorities. The basis for industrialisation is provided by the varied and widely distributed resources of metals and mineral fuels, the expanding output of industrial crops, the abundant hydro-electric resources and the labour power and market represented by 670 million people. The aims of industrialisation are simple: to provide an increasing proportion of the capital goods needed to build a modern economy, to provide the consumer goods needed by an expanding rural population with a rising level of living, and to even out

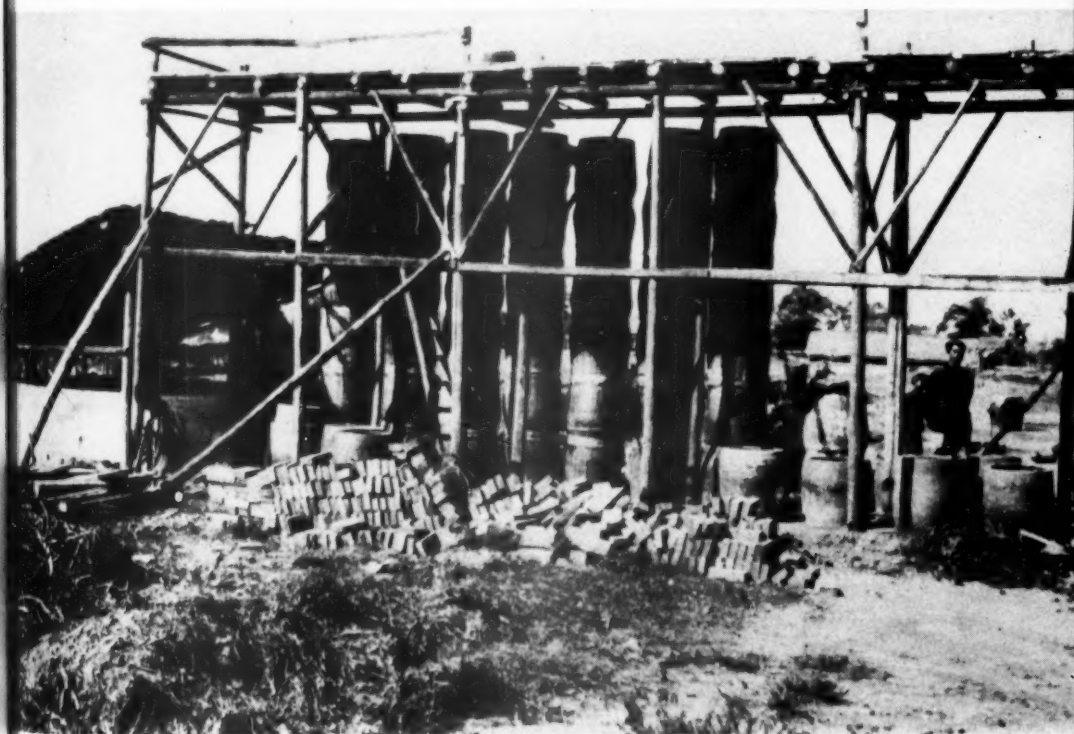
<sup>51</sup> For some of the problems of early industrialisation in China see Feuerwerker (1958).





*Photo: Keith Buchanan*

Fig. 9. "Native-style" blast furnaces under construction, 30 miles north-west of Peking. Batteries of such furnaces, rising dramatically amid the fields of vegetables or cereals, became a distinctive feature of the countryside in 1958.



*Photo: Keith Buchanan*

Fig. 10. Sulphuric acid plant under construction on commune near Nanning, Kwangsi Chuang Autonomous Region. Use of local materials in construction; technical advice supplied by teachers from local technical college.

the differences in living levels between town and country, between the Han and minority peoples. The implementation of this policy means a major shift of industry towards the interior of China and the progressive penetration of industry into the rural areas. This accelerating development of rural industry is one of the most striking changes in the Chinese countryside in the last decade; it is, moreover, a development of major social significance. As Gatti has pointed out, the creation of a series of giant industrial enterprises on the Anshan or Wuhan pattern would have only a limited impact on a country the size of China; its cultural impact would be small and the great mass of the population would remain cut off from the industrialisation and mechanisation which are the basis of modern life. Decentralisation avoids the creation of a new "technocracy" in the heart of the peasant masses and makes possible the maximum diffusion of the new techniques throughout the countryside.<sup>52</sup> Under these conditions the Chinese countryside is developing a personality very different from that of the other emergent nations of Asia or Africa.

In their policy of industrialising the countryside the planners could draw not only on the great numbers of underemployed but also on the tradition of craftsmanship which lingered on in even the poorest village. These non-agricultural activities

"... were all part and parcel of a system which, though based on agriculture, could not function efficiently without other forms of production. Without their secondary occupations the poor peasant families, who constituted five-eighths of the village's population, could not have survived even at their customary miserable level. Ten Mile Inn (the village studied), like other peasant communities, stood on two legs—farming and handicraft."<sup>53</sup>

These human resources of labour and traditional skill, no less than the wide availability of ores, industrial crops or power, have played an important role in the growing industrialisation of the countryside.

This development of local industry is integrated on the one hand with medium- and large-scale modern industry; on the other, it is closely integrated with agriculture. Once established, its continued expansion can be assured only if increasing per capita productivity in agriculture makes possible a continuing shift of labour towards industry. At the same time, the productivity of agriculture can be increased only if rural industries make available better tools—carts, wheelbarrows, rice-husking machinery and the like—and if servicing facilities for such improved equipment are available in each village or each commune. The technical transformation of agriculture and the development of industry must therefore proceed simultaneously.

The range of industries operated by the communes is suggested by the sample details cited above (p. 15). The significance of rural in-

<sup>52</sup> Gatti (1959): 34–35.

<sup>53</sup> Crook (1959): 4.





*Photo: Keith Buchanan*

Fig. 11. The beginnings of industrialisation in the interior. Handling the masses of crude locally-produced pig iron on a Yi (minority) commune near Kunming. Recently-constructed blast furnace in the background.



*Photo: K.N.O.K.S.*

Fig. 12. New housing on commune near Chengtu, Szechwan. Improved housing of this type, provided with basic services, is beginning to replace the old mud and thatch huts on the most advanced communes.

dustry can be illustrated by reference to the manufacture of iron and steel and the generation of electricity.

The small "native-style" blast furnace is one of the most publicised elements in China's "Great Leap Forward".<sup>54</sup> Such furnaces produced 4.16 million tons of pig iron in 1958, as against 9.53 million tons produced by modern methods; peasant produced steel was three million tons, out of a total of 11.08 million tons. The advantages of these small units are obvious: they can be built cheaply and with the use of local materials; they can utilise deposits of coal and iron too small to warrant the setting up of large-scale plants; their operation can be organised to fit in with the seasonal rhythm of agricultural activities; by providing iron and steel suitable for working up into farm tools and equipment they cut down the pressure on a heavily-burdened transport system. They vary in size and design and, in the initial stages, they varied greatly in the quality of their product, a defect that was rapidly overcome as the production teams acquired experience. By November 1958, when the writer was in China, it was estimated that 700,000 such furnaces had been built and that some twenty million people were engaged in iron and steel production.<sup>55</sup>

The widespread development of small rural hydro-electric plants was one of the most distinctive developments of 1958. These small plants added some 900,000 kilowatts to the country's installed capacity. They complement the bigger plants, they spread the centres of power supply more evenly, help to speed up the technological revolution in the countryside, and ease the labour shortages created by the intensification of agriculture and the development of industry. They require only a low water head, small investment and no very specialised skills for their construction. Wooden turbines may be used; brick, wood or stone replace concrete in construction. They can thus be built with local labour and with local raw materials and they can be built rapidly. It is realised that such plants do not in any way represent a final answer to the rural power problem; nevertheless, they supply the power that is urgently needed in the initial stages of the agricultural transformation and they supply it cheaply. Even more important, in their construction and operation the peasant acquires experience which will be of major value when larger and more complex hydro plants are built. The saving of labour is illustrated by the experience of one county—Yunchun in Fukien—which, by early summer 1958, had sixteen small hydro-electric stations and twenty-one watermills in operation; these, it was estimated, saved 600,000 labour-days yearly.

These rural industries are an excellent illustration of the policy of turning labour into capital. Individually small, in the aggregate they

<sup>54</sup> Gatti (1959): 38–43.

<sup>55</sup> These figures include urban iron and steel production by "native" methods; this is, however, only a small proportion of the total.

represent a major addition to China's production potential, as the figures quoted for iron and steel production and hydro-electric generation clearly show, and, what is more important in the context of this article, they represent an addition to the productive potential of *the countryside*. Their major long-term significance, however, lies in the fact that they are introducing the peasant to modern techniques and demonstrating to him that industrial development does not necessarily depend on the specialist and the technician, on large-scale financial resources or state aid. Once this lesson is learned, the psychological basis has been laid for an accelerating transformation of the face of rural China.

#### PERSPECTIVE

This accelerating transformation of rural China is of vital importance to the world; indeed, it is likely to be one of the decisive changes in this second half of the twentieth century. It illustrates how the release of human energies and enthusiasm through a social and political revolution has made possible the creation of an entirely new relationship between man and his environment. It illustrates how, in the shaping of this new environment, new needs and new opportunities have brought into being new forms of social organisation. And if, as seems likely, the Chinese experiment succeeds, the achievement will have a major impact on the uncommitted countries of South and East Asia. The creation, within the framework of a Communist society, of a new world of plenty will be taken as evidence of the superiority of that society by the small and struggling nations on China's southern fringes. At that moment, a new world power balance will be struck.

#### REFERENCES

##### WORKS REFERRED TO

- Belden, J., 1952, *China Shakes the World*, London.
- Chou En-lai, 1959, *Report on Adjusting the Major Targets of the 1959 National Economic Plan*, Peking.
- Crook, I. and D., 1959, *Revolution in a Chinese Village: Ten Mile Inn*, London.
- Dumont, R., 1957A, *Révolution dans les Campagnes Chinoises*, Paris.
- Dumont, R., 1957B, *Types of Rural Economy*, London.
- Dumont, R., 1959, "La plus grande épopée agricole du XX<sup>e</sup> siècle" in *Cahiers Franco-Chinois*, No. 3, Paris.
- Feuerwerker, A., 1958, "China's Early Industrialisation", *Harvard East Asian Studies* 1, Cambridge, Mass.
- Gatti, A., 1959, "Notes de voyage dans les communes chinoises", in *Cahiers Franco-Chinois*, No. 1, Paris.
- Ho, Ping-ti, 1959, "Studies on the Population of China, 1368-1953", *Harvard East Asian Studies* 4, Cambridge, Mass.

- Huberman, L. and Sweezy, P. (ed.), 1959, *China Shakes the World Again*, New York. Contains articles by C. Bettelheim, R. Dumont, K. S. Gill and D. D. Kosambi.
- Lambin, D., 1959, "La Chine Propre", in *Cahiers Franco-Chinois*, No. 3, Paris.
- Strong, A. L., 1959, *The Rise of the Chinese People's Communes*, Peking.
- Teng Tse-hui, 1955, *Report on the Multiple-Purpose Plan for Permanently Controlling the Yellow River*, Peking.

## OTHER WORKS

- Adler, S., 1957, *The Chinese Economy*, London.
- Fitzgerald, C. P., 1958, *Floodtide in China*, London.
- Fried, M. H., 1956, *The Fabric of Chinese Society*, London.
- Indian Delegation to China, 1956, *Report on Agricultural Planning and Techniques*, New Delhi.
- Lavallée, L., Noirot, P., Dominique, V., 1957, *Économie de la Chine Socialiste*, Geneva.

## OFFICIAL PUBLICATIONS

- China's Big Leap in Water Conservancy*, 1958.
- People's Communes in China*, 1958.
- Six Hundred Million Build Industry*, 1958.
- Tung Ta-Lin, *Agricultural Co-operation in China*, 1959.
- China Reconstructs* (monthly).
- China Pictorial* (monthly).
- Peking Review* (weekly).
- All the above official publications are published in Peking.

# Aspects of the Political Geography of Southeast Asia

## *A Study of a Period of Nation-Building*

T. G. McGEE

IN the last one hundred and fifty years the emergence of new nation states has been one of the most important political developments affecting the international scene. This was essentially a European born phenomenon, linked with the greater degree of political control made possible by the technological and institutional changes which were part of the Industrial Revolution. With the spread of Western political and economic power throughout the non-Western world, the idea of the nation states has diffused into areas where the nation state, at least on the European model, was not part of the institutional system. As Toynbee has noted, it spread to these areas,

"Not because it had been found by experimentation to be suitable for the local conditions . . . but simply because the West's political power had given the West's political institutions an irrational yet irresistible prestige in non-Western eyes."<sup>1</sup>

This process of nation-building poses fundamental problems to the political geographer. Does the political institution of the "nation state" make possible a more efficient utilisation of the physical environment by man? Can Western political institutions operate in a non-Western environment? What effect does the creation of these new nation states have on the international scene? This article seeks to analyse this process of nation building in one non-Western area—Southeast Asia. In so doing it indirectly comments on the questions posed above.

### PHASES OF POLITICAL ORGANISATION IN SOUTHEAST ASIA

Broadly, Southeast Asia has experienced four different phases of political organisation, each of which is characterised by different geographical patterns. Today all four types co-exist, and many problems of the area stem from the attempt to integrate these different forms of political organisation within the framework of the modern nation state.

Historically, the first phase was one of local tribal units. Economic-

*T. G. McGee, formerly of the Department of Geography, Victoria University of Wellington, is now on the staff of the University of Malaya, Kuala Lumpur.*

<sup>1</sup> Toynbee (1953): 70-71. This point might be taken further. In addition it was the West's economic power and more powerful technology which gave the other aspects of their society such an "irresistible prestige in non-Western eyes".

ally, these were based on either nomadic hunting and fishing, or shifting agriculture. Politically, they were organised into small groups of chieftain societies, although in some the magico-ceremonial basis of their life emphasised the important political role of the shaman. Territorially, the political power was immediate; that is, the tribes generally controlled only the area in which they were located; political power was thus scattered in a series of tribal cells over the countryside. In some tribes control over the land was vested in the chief; in others the land was held in common by all members of the group. These societies possessed only a limited technological equipment for the acquisition of food. This meant that most of their time was spent in the food quest and the consequent delicateness of the ecological balance allowed for little development of specialised political functions. Today, remnants of these societies survive among upland or jungle peoples such as the Moi of Indochina and the Semang of Malaya. Such relict groups present important problems of political integration to the nation state.

The second phase was marked by the dominance of aristocratic kingdoms, a form of political organisation which is thought to have grown up with the invention of irrigation. Wittfogel argues that the development of irrigated agriculture provided the basis for political systems profoundly different from those that developed in the West. In the East,

"governmental execution of certain vital functions of agriculture (primarily large-scale management of irrigation and defence against floods) involved a co-ordinated and autocratic system of social, political and economic control."<sup>2</sup>

These Oriental despotisms were "semi-managerial states"; they were characterised above all by the fact that the state was "stronger than society"; that is, stronger than the society's non-governmental forces. The nation states which developed in the West, by contrast,

"... encouraged and regulated rather than managed what they considered the crucial spheres of contemporary economic life."<sup>3</sup>

From early times there was thus a fundamental contrast between the political systems which developed in the East and West.

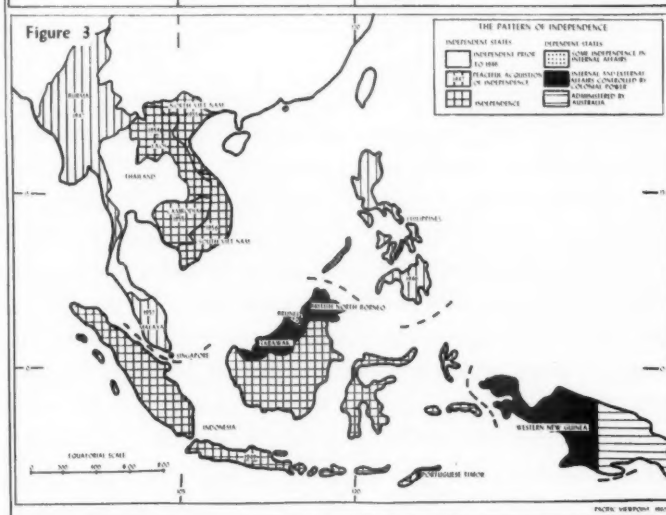
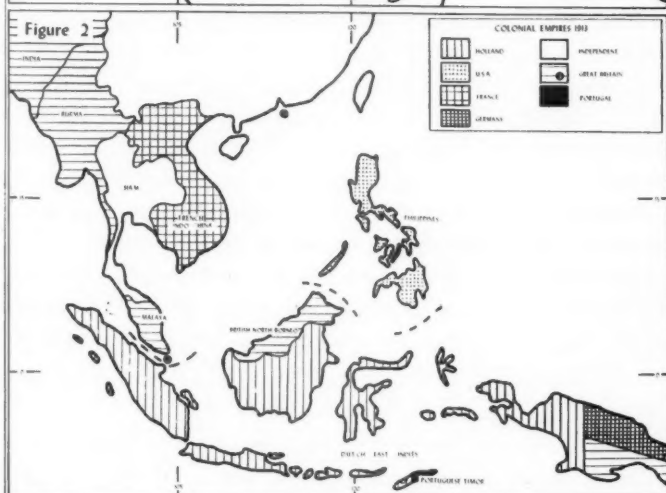
From about the first century A.D. a succession of Indianised and Sinicised kingdoms based on irrigation agriculture grew up in a series of "culture hearths" in the great river basins (Fig. 1) of South-east Asia.<sup>4</sup> They reached their height with such kingdoms as Sukhoithai in the Chao-Phraya river basin, and the Pagan dynasty centred on the Irrawaddy river basin. Other empires grew up based largely on commerce and control of the main trade routes. The outstanding example of such trade-based empires was Srivijaya, which over the period 700-

<sup>2</sup> Wittfogel (1950): 447.

<sup>3</sup> Wittfogel (1950): 447.

<sup>4</sup> de Geer (1928): 205-247.





1350 A.D. extended its political control over most of the northwest coast of Sumatra and the east coast of Malaya, dominating the important trade routes which ran through the Straits of Malacca. This form of political organisation affected the tribally organised sub-stratum of the people little, but the diffusion of the techniques of irrigated rice cultivation made possible greater concentrations of population and this made possible more effective political control of greater numbers of people.

The third and by far the most significant period of political development resulted from the impact of Western influences. This stage was initiated by the advent of Islam which spread over most of Malaysia during the thirteenth, fourteenth and fifteenth centuries. Islam introduced a new religious pattern to Southeast Asia but brought about little change in the existing political institutions. Early European contact, in the shape of economic penetration by Portugal, Spain and Holland, had likewise little effect on the political institutions, other than to cause regroupings of various kingdoms which they chose to support for purposes of trade. It was not until the nineteenth century that the territorial scramble for Southeast Asia began, and with it the radical penetration by Western institutions (Fig. 2). Much of the area was carved up between Britain, France and Holland (and later the U.S.A.). The new colonial boundaries frequently ignored demographic, ethnic and religious realities, and thus sowed the seeds of later political difficulties. At the same time, the colonial powers made little effort to change the indigenous political systems, preferring to work through existing political institutions by means of various types of "indirect rule". Such a policy virtually froze the indigenous political institutions and also set up rival systems of political power.

The expansion of the cash economy during the next one hundred and fifty years led to far more significant changes. The importation of large numbers of Chinese and Indian alien groups to work in the rubber and mineral areas formed opposition forces to the existing political system and introduced new patterns of economic power. The introduction of improved health measures lowered the death rate and led to increasing population pressure in many areas. The provision of an improved communication system, the creation of new cash crop areas, the growth of new port towns such as Rangoon, Singapore and Batavia, all led to social and economic tension amongst the population and laid the economic foundation for a new nationalism.

This growing nationalism ultimately brought about the fourth period—the phase of imperial devolution and nation building which reached a climax in the years following the Second World War. In 1939, there was only one independent nation in Southeast Asia—Siam (Thailand)—and it was independent largely because of British-French antagonisms on the Southeast Asian mainland. By 1958 all the states had achieved

their independence except for Portuguese Timor, Western New Guinea, British Borneo and Singapore (Fig. 3).

There was a clear division in the manner in which the states received their independence from the colonial powers. First there were the states which achieved their independence peacefully; these states were Burma (1947) and Malaya (1957) from the United Kingdom, and Philippines (1946) from the United States. These states escaped the devastation inevitable in a long war of independence and thus possessed a better economic and political structure on which to base their political development. Conditions were very different in the countries of warlike devolution—the various states of French Indochina<sup>5</sup> and the Netherlands Indies—which went through long and devastating wars before they were granted independence. This, of course, led to a much more virulent anti-colonialism, and left to the successor states a bitter legacy of shattered economies and political disorganisation.

#### FACTORS IN THE GROWTH OF NATION STATES

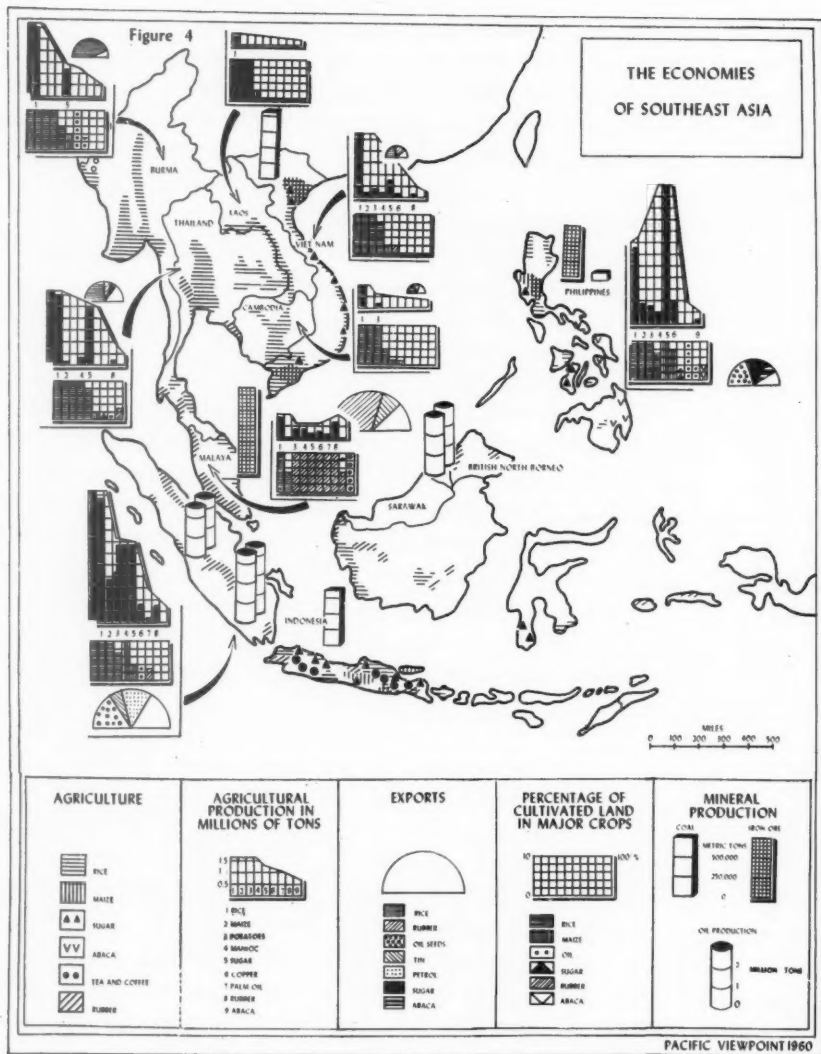
The problems of nation-building stemmed from many other factors than this immediate phase of "imperial devolution".<sup>6</sup> They stemmed primarily from the distinctive politico-geographical conditions which the state had to build upon. An analysis of the Southeast Asian scene seems to confirm Deutsch's general hypotheses regarding the growth of the nation state; at the same time it suggests that the very different historical experiences and environments of the Southeast Asian countries gave rise to distinctive variants of the general pattern. Secondly, there are the problems which arose during the emergence of the nation states in Southeast Asia. These are closely linked with the first set of conditions, but they are also vitally affected by the geopolitical situation of the area, i.e., its relationship to the world power blocs.

Deutsch<sup>7</sup> has suggested several basic conditions which favour the growth of the nation state. The first is the shift from a subsistence to an exchange economy, which provides the economic setting for the period of nation-building. This brings the population increasingly in touch with one another, and breaks down the old patterns of ethnic and linguistic stability. In Southeast Asia, although there had been much cultural mixing throughout history, Westernisation and the introduction of a cash-oriented economy were the significant factors in producing this condition for nation-building. At the same time this period of Western control left Southeast Asia with major economic problems. Before the Second World War the region's role in the international economy "was

<sup>5</sup> Laos; Cambodia; Cochin-China; Tonkin; Annam.

<sup>6</sup> Devolution is used to mean the break away of peripheral colonial states from the controlling power. Broek (1944): 175.

<sup>7</sup> Deutsch (1953): 168–195.



largely a passive one, influenced or controlled by foreign countries".<sup>8</sup> Even after the colonial powers had relinquished their administrative control, they still retained commercial holdings which provided a basis for bargaining with the new nations.<sup>9</sup> Western domination also left a major legacy in the shape of the dual economy. During the period of Western control the vast majority of indigenous people remained engaged in subsistence rice cultivation, while the new money economy developed through the initiative of the European and Asian alien groups. Increasingly, however, the growing of cash crops such as rubber, tea and rice was taken up by the peasants. This was largely due to the need for cash to purchase the Western consumer goods which were coming increasingly on to the market. The value systems of the indigenous peasantry became rapidly oriented towards a cash economy, producing for a world market subject to price fluctuations which the peasant could neither control nor understand. Thus the 1952 *Economic Survey of Asia and the Far East* reported a decline in the demand for principal export commodities despite an advance in the physical volume of production.<sup>10</sup> As a result, all but the rice-exporting countries faced severe problems in financing both imports and internal development plans. Such an unstable economic base presents a major problem to these developing nation states.

The second condition for the growth of nation states is the social mobilisation of the rural population into core areas. The new market economy in Southeast Asia was uneven in its penetration and its impact. It created new cash crop areas such as the Lower Burma region and Cochin-China (Fig. 4). It also led to an increase in cash cropping and population density in existing regions of agricultural development and heavy population pressure, as in Java, Central Luzon and the Tonkin delta. Increasingly these "core areas" tended to become centres of social, political and economic discontent for they were the areas where the problems of parcellation, land tenure, foreign money-lenders, indebtedness, rural unemployment and overpopulation produced severe agrarian problems. Western penetration did not create all these problems; it did, however, intensify the political and social instability of these areas.<sup>11</sup> In contrast to these areas which bore the full brunt of Western impact were the uplands which remained refuge areas, little affected by outside influences. The resulting sharp economic cleavage presents problems of political and economic development. A solution to these problems is doubly difficult since these lines of economic cleavage often reinforce pre-existing lines of ethnic or cultural division.

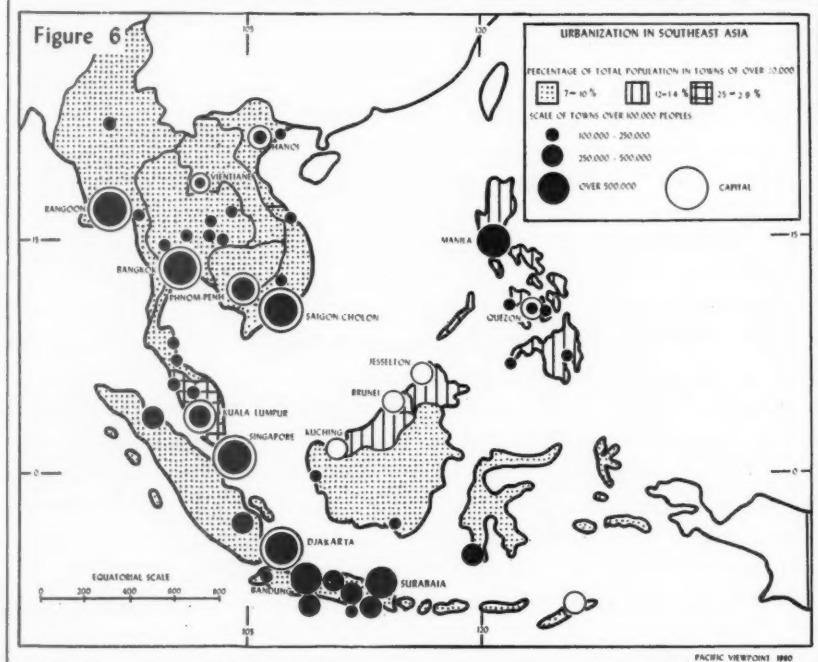
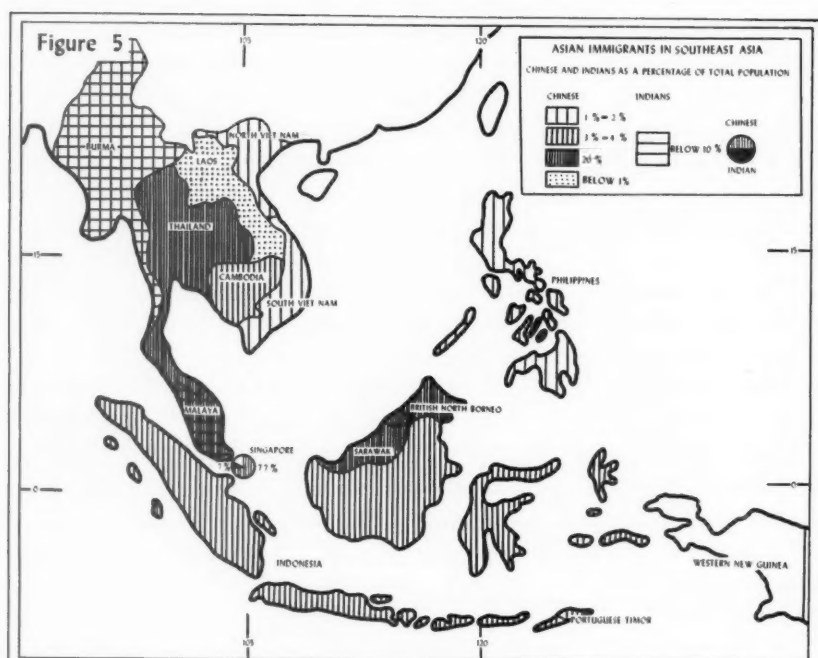
The third condition for the development of nation states as laid down

<sup>8</sup> *Economic Survey of Asia and the Far East* (1949): 293.

<sup>9</sup> See Mills (1949): 5.

<sup>10</sup> *Economic Survey of Asia and the Far East* (1952): 1.

<sup>11</sup> See Jacoby (1949): 32.





by Deutsch is the growth of towns and the concurrent growth of the middle class. In Southeast Asia these developments took a form vastly different from those of Western Europe, for there was no indigenous middle class and the pattern of urbanisation was largely imposed by the colonial powers. The middle class was recruited from the flood of Asian immigrants into Southeast Asia, who, over the past century, moved into the area to provide labour for Western commercial enterprises (Fig. 5). Local folk and immigrants tended to form what Dobby has termed a "cellular society", each group concentrating in

"self-contained cultural enclaves—Chinatowns, Indian estate labour lines, Chinese tin mines, Burman, Thai and Malay villages. Each group lived in its own watertight compartment; there was little economic competition and much social aloofness."<sup>12</sup>

In most countries of Southeast Asia the middle class was therefore largely non-indigenous and these foreign immigrants today control much of the wealth of the new nations. Thus in the Philippines it was estimated in 1953 that Chinese controlled forty-two per cent of the investments in commercial enterprises.<sup>13</sup> The pre-war situation in Burma was little better; in 1931 forty-nine per cent of all those who paid income tax were Indians.<sup>14</sup> Practically everywhere it is these foreign groups, in particular the Chinese, who have inherited the economic power of the European colonial groups. With the increasing drift of local people to the large cities and their growing desire to enter urban occupations that are often monopolised by immigrants, it is in the cities that the problems of the plural society will come to a head.

The new states are thus faced with the double problem of integrating the indigenous groups into the money-earning sector of the society and at the same time of integrating the alien groups into their political structure.

It was suggested above that the conditions of urbanisation are very different from those in Western Europe. There is no ordered hierarchy of cities such as geographers have described in Europe. The pattern is dominated by the "million city"—Saigon, Bangkok, Singapore, Djakarta, which are five to ten times as large as the next largest city. These cities grew principally as a result of the colonial pattern of development and are often parasitic in character. As Hauser has said (Fig. 6),

"... they tended to obstruct economic growth in their country of location by retarding the development of other cities in the nation, by contributing little to the development of their own hinterland, by being orientated primarily toward the contribution of services to the colonial power abroad or the colonial or indigenous elite in the city itself."<sup>15</sup>

<sup>12</sup> Carnell (1958): 409.

<sup>13</sup> Kahin (1959): 451.

<sup>14</sup> Thompson and Adloff (1955): 87.

<sup>15</sup> Hauser (1957): 87.

The classic example of such cities was Hanoi; here with the passing of the colonial regime the city has undergone a major economic transformation. In 1954 its parasitic character is shown by the fact that Hanoi bought five times more than it produced—in fact businesses almost exceeded the number of tradesmen and artisans.<sup>16</sup> Since independence a systematic and successful effort has been made to build up the industrial sector of the city. But throughout the rest of Southeast Asia the need to build up industries in the large cities remains one of the basic problems of the new states.

The fourth prerequisite for the growth of nation states is an adequate communication grid.<sup>17</sup> The advent of the West has led to the construction of basic communications, but unfortunately these were designed not so much to unite a country as to tap its mineral and agricultural resources for the colonial powers. Sometimes, as in Burma, this did incidentally unite various parts of the country; here the railway line to the teak forests and oil of the north helped unite this area with the heavily populated lowlands of the Irrawaddy delta. In French Indochina, however, where there was little economic need to link north and south by railway, there developed two separate core areas. This isolation of the great rice bowls of North and South Vietnam was completed by the political fragmentation after the Geneva Agreement. To achieve effective unity and control the new nations were thus faced with the problem of reshaping and extending their network of communications. In this, they were greatly helped by the technological innovations of the "second industrial revolution"—in particular the aeroplane and mass education devices (such as films) which have played a vital role in breaking down isolation and unifying the new countries of Southeast Asia.<sup>18</sup>

Finally Deutsch suggests there must be an awareness amongst the people of the need for the nation-state. To some extent this awareness can be built up through the use of symbols, such as a national flag, which will in time become tangible proof of a people's belief in their nation.<sup>19</sup> Here the former colonial status of Southeast Asia was to prove an asset, for anti-colonialism proved an important unifying and rallying cry for the strident nationalism of the young states. It was, indeed, something more than a political slogan, for it represented a vital unifying force

<sup>16</sup> Limbourg (1956): 30.

<sup>17</sup> See Whittlesey (1939): 23.

<sup>18</sup> Deutsch (1953): 179, cites the economic developments of the Second Industrial Revolution which have a "lift pump" effect on the mass of the population, inducing migrations and culture contact resulting in national assimilation and nation growth.

<sup>19</sup> See Gottman (1952): 512-519.

in the young nations which transcended, at times, practically all forms of group and communal opposition.<sup>20</sup>

Nation-building was thus encouraged by patterns of economic and cultural disturbance similar to those experienced earlier in Europe, but in addition the vastly different historical and cultural background of Southeast Asia presents many new problems. Moreover, there were the more local problems of uniting areas characterised by diversified relief and a tropical climate, possessing a limited industrial resource basis and an unparalleled ethnic, cultural and religious diversity.<sup>21</sup>

#### THE THREE PHASES OF POST-WAR NATION-BUILDING

In Southeast Asia the process of nation-building can be divided into three broad periods since 1945. The first period was one of establishing internal security and control, while attempting to put the economy on a more solid basis. When internal security and territorial integration had been achieved, the nation state then had to tackle the problem of social and economic development. Finally, there has been a third phase since 1958 in which democratic institutions have collapsed and been replaced by semi-military dictatorships.

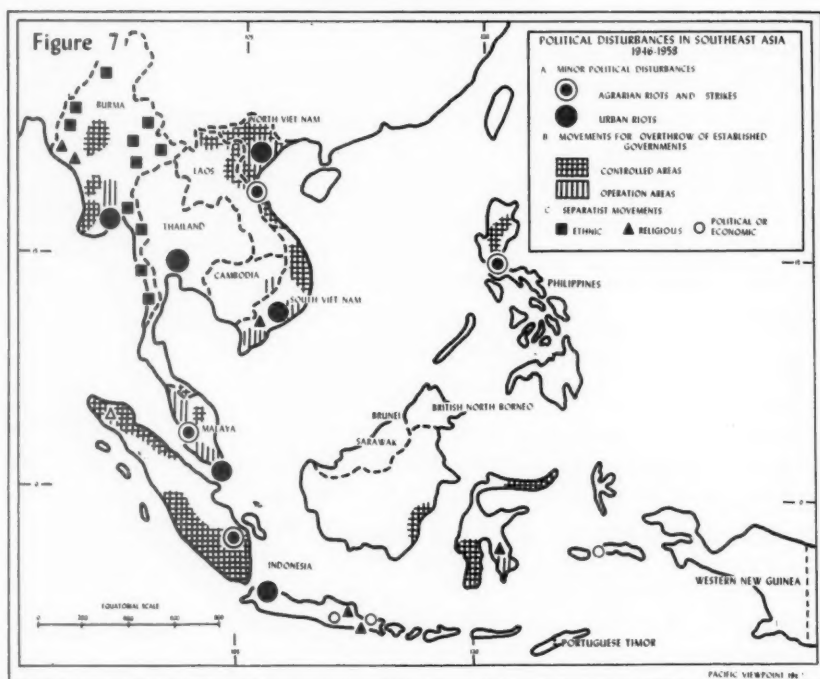
Each of these phases of political growth has been characterised by different types and territorial patternings of political groups. In the following analysis an attempt is made "to describe, classify and map (the) political groups"<sup>22</sup> active in Southeast Asia during the period of postwar nation-building (Fig. 7).

During the initial phases of imperial devolution and the first years of independence, there were two principal types of opposition. First there were the ethnic and religious separatist movements, which differed from the more extreme opposing groups in that they were willing to compromise with the new governments provided they could win recognition of their special ethnic or religious rights. These movements tended to be located in the upland areas. Typical of the ethnic separatist movements were the revolts of Karen and Shan tribal groups, who resented the imposition of political authority by another ethnic group—the lowland Burmans. In Burma a federal framework had to be created to cope with the claims of these groups. North Vietnam had from the beginning followed the Sino-Soviet pattern of creating semi-autonomous minority areas. The religious groups were generally extreme reactionary

<sup>20</sup> It is significant that anti-colonialism as a unifying force is now beginning to wane in Southeast Asia while still remaining in the younger states of Africa. This is a major cause of the split in the Afro-Asian bloc which has developed in the last year.

<sup>21</sup> These patterns have been described and mapped in three previous major articles—Fisher (1950 and 1956) and Broek (1944).

<sup>22</sup> Wright (1944): 194.



groups who opposed state religious control. Typical were the Islamic "Majahads" located in the Arakan area of Burma who opposed the dominantly Buddhist government. Another example was the Darul Islam movement in Java, an Islamic group. Sometimes the religious groups represent a synthesis of Christianity and Eastern religions. Such were the Cao-Daist group of South Vietnam who were particularly active during the period prior to the Geneva Agreement.

Secondly, there were the movements which aimed to overthrow the controlling Government and replace it by another form of political organisation. These groups were chiefly political or economic in their aims; either leftist movements, remnants of old underground fighting groups from the days of Japanese occupation, or reactionary groups generally backed by conservative elements opposed to new, more democratic, systems of government. Although these movements have continued throughout much of the period since 1945, this is purely because of the varying stages at which independence has been attained; in each country they have been at their strongest in the initial period of independence. Territorially, these groups tended to be located in upland areas, relatively close to the main areas of population, estate agriculture and communications. Thus in Burma they were located in the Pegu Yomas range within easy reach of the highly populated areas of Central

Burma; in Indochina, in the upland areas backing the coastal lowlands; in the Philippines they operated from the uplands of North and Central Luzon into the rich, highly populated area surrounding Manila; and in Malaya in the upland areas within easy reach of rich estate areas of the west coast. It took many years for the nation states to establish control over these groups.

The cooperating groups were derived from the Western educated elite and aristocratic groups as well as from movements for national independence formed during the colonial era. The groups they represented were of two types. The first type belonged to the dominant population group of lowland people as for example the lowland Burmans. Secondly, there were the indigenous groups such as Malays who cooperated with the West to retain their declining political power against the infiltration of new immigrant groups. This initial period was characterised by a framework of Western democratic institutions, by a political elite of nationalist leaders and above all by attempts to integrate various warring groups within the state in an effort to stabilise the country.

Once these major problems of integration, security and stability had been partly solved, the second stage of nation state development in Southeast Asia could assume more importance—the social and economic development of the state. Here, once again, regional and urban discontent came to a head. With the exception of the Democratic Republic of North Vietnam and monarchies such as Laos and Cambodia this development was attempted within a type of Western democratic framework which presented many problems. Foremost of these is the problem of the maintenance of obedience.<sup>23</sup> The frequent refusal of pressure groups such as the army to accept decisions of the central government is the cause of much political instability in the area.

However, it was the economic problems of the state which produced the most significant movements of discontent. These fell into three broad groups. Firstly, peasant revolts and unrest occurred. These were not uncommon in Southeast Asia before the war, and were symptomatic of such increasing problems as population pressure and indebtedness. In the second phase of nation-building peasant unrest was more often the result of the governmental efforts to build a new social and economic structure. Thus land reforms frequently produced opposition as occurred in the Vinh area of North Vietnam in 1956. That the democratic Republic of North Vietnam should provide the most substantial example of opposition to land reform is indicative of the extensive change in this country, and the failure of the other new nations to reform their basic agrarian structures. Secondly, there were strikes and riots in estate areas as in Malaya and Indonesia, which reflected the growing power of trade unions and their demand for higher wages. A third type of economic

<sup>23</sup> See Panikkar (1959): 17.



dissatisfaction was distinctly regional in character. Economically undeveloped Southeast Asia has great regional contrasts within countries in terms of economic development, and these present difficulties to integration at the economic and political levels. They were particularly prominent in Indonesia, above all in the islands of Sumatra and Kalimantan, rich in oil and rubber, which contributed almost three-quarters of the total export earnings of the country.<sup>24</sup> Here dissatisfaction with what was regarded as inadequate political representation in relation to the economic contribution of the islands to the revenue of the state, expressed itself in support of the army's attempts to overthrow the Sukarno government. It is against a background of population pressure, unstable agricultural economies, and separatist tendencies that the efforts of the new countries to diversify and build their economies must be seen.

In general it is the failure of these efforts to produce a rapid solution to basic economic problems such as poverty which has brought about the third phase of nation-building. The political elite who succeeded in carrying through independence has failed to

"create the type of political strength based on organizational integration and control, which would give the countries of Southeast Asia efficient government and administration and thus increase their absorptive capacity so that massive inputs of capital and technical skills could be utilized for development on a broad front."<sup>25</sup>

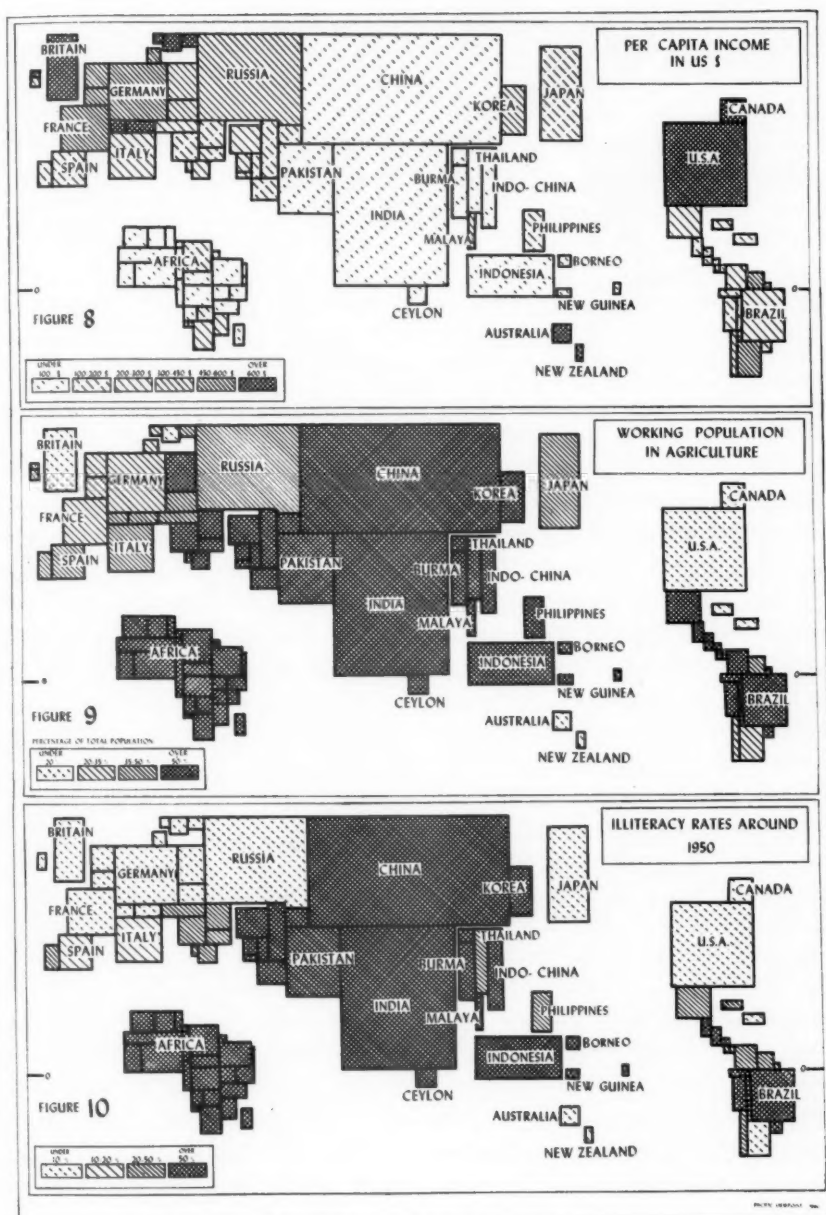
But the failure to organise the political structure efficiently is only one factor in the collapse of the political systems of these states. Above all the major fault lies in the piecemeal policy of social and economic reform which has nibbled at, but not changed, the basic social and economic structure of these states.

In Southeast Asia after 1958 the republican democratic institutions began to crumble. In Burma on 28 October 1958 General Ne Win, leader of a military faction, took over control of the government which he continues to dominate. In Indonesia, the elections scheduled for September 1959 have not yet been held. In Thailand on 20 October 1959 Field Marshal Sarit took over power and on 28 January 1959 the interim constitution was proclaimed, based on the Constitution of the United Arab Republic, which gives the Prime Minister special powers. Most recent has been the assumption of political power by the military clique in Laos in the first week of January 1960. In North Vietnam the achievement of independence from French control was followed by the setting up of a communist state in 1954. South Vietnam is a virtual dictatorship propped up by American aid. Only in the Philippines and Malaya are democratic institutions working. Both countries, however, have several internal problems which may challenge

<sup>24</sup> Fryer (1957): 197.

<sup>25</sup> Pauker (1959): 329.





Figs. 8-10. Selected Indices of Social and Economic Development in Southeast Asia. These world maps highlight the major problems of the area—undiversified economy, poverty, and illiteracy—problems shared with other tropical areas of the globe. (Size of countries is proportionate to population.)

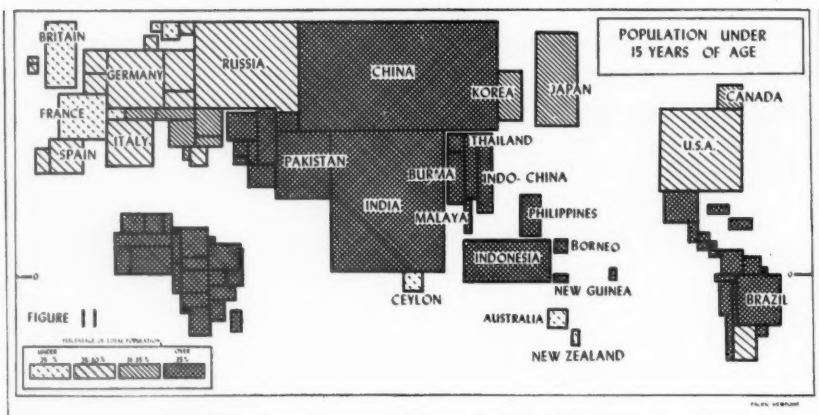


Fig. 11. This diagram illustrates the youthful character of Southeast Asia's population, a result of high birthrates and low expectation of life. This type of age structure is typical of all underdeveloped tropical areas. (Size of countries is proportionate to population.)

the efficiency of their institutions—in Malaya, the problem of a plural society; in the Philippines, an archaic social and economic structure.

Thus, Southeast Asia has turned from an age of democracy to an age of generals, to a rigidly controlled autocratic political structure which is, in some respects, not unlike the second phase of its political history.<sup>20</sup> But the problems in the creation and development of nation states which led to this situation might well have been overcome for the recent unparalleled improvements in world communications and technology mean that the methods of creating the nation state have never been so well developed and efficient.

That these problems should have proved so intractable is due largely to the economic and social backwardness of the area. For new political institutions to work efficiently (especially democratic institutions) there must be social and economic development as well. Social change there has been; an example is the emancipation of women in the Islamic areas. There have been economic developments too, but these have not kept pace with the change in political institutions. Today in Southeast Asia there are several basic conditions that are unfavourable to the democratic process: the low per capita income (Fig. 8), an economic structure that is overwhelmingly agrarian (Fig. 9), social conditions such as high illiteracy rates (Fig. 10), and the persistence of pre-capitalist forms of social organisation. Thus the new Southeast Asian governments still have to overcome archaic social conditions and poverty if they are to raise the standard of living. Political development, then, demands social and economic development—this is under way but is being negated by the rapid population increase (Fig. 11) which offsets any temporary accumulations of capital for economic development.

<sup>20</sup> See p. 40.

## SOUTHEAST ASIA IN THE MODERN WORLD

A solution to these problems has been made no easier by the world political position of Southeast Asia. In a world divided into two hostile political blocs, there are three political positions to which Southeast Asia could be drawn. The first, alliance with the Western powers, is officially followed by Thailand and the Philippines within the framework of SEATO and unofficially by the ruling cliques of South Vietnam and Laos. Secondly, there is alliance with the Communist bloc, with which the Democratic Republic of North Vietnam is linked. Finally, there is neutralism—a position between the two great power blocs. India leads the remaining Southeast Asian nations in this group.<sup>27</sup> These varying political choices reflect Southeast Asia's geopolitical position, for the region has always been a shatterbelt into which the great empires of India and China have expanded. Today, although the leadership of India and China in the region is important, the area has become even more important as a vital testing ground for the rival merits of the two great power blocs.

Western policy in the region has been designed firstly to contain the supposed Communist infiltrations into the area, and secondly to buttress the existing social and economic structures through technical and financial aid such as the Colombo Plan and American loans. By contrast, it is unnecessary for the Soviet bloc to be concerned with political measures such as containment. In the struggle for prestige in Southeast Asia the Soviet Union has several advantages. It despises colonialism and is always willing to give moral support to the movements for independence. Bulganin expressed this view in 1955 when he said, "The just struggle of the Asian peoples for their national liberation meets with the deep sympathy and moral support of the Soviet people. . . ."<sup>28</sup> The Soviet Union's successful economic development has also set an example which many of the Asian countries desire to follow. But the greatest prestige card is the geographical fact which Khrushchov emphasises . . . "I want to add that our country is both European and Asian."<sup>29</sup> Since 1955 the Soviet Union has greatly increased its economic aid in the area. This is vastly different in character to the American loans, consisting mainly of interest bearing credits to finance specific development projects. By 1 February 1958 the Sino-Soviet bloc had loaned \$175 million to Burma, Cambodia and Indonesia which made up a considerable part of the financial assistance these countries received.<sup>30</sup>

<sup>27</sup> Note other committed nations may also join this group to vote on certain issues.

<sup>28</sup> Bulganin (1955).

<sup>29</sup> Khrushchov (1955).

<sup>30</sup> Department of State Publications 6632 (1958): 23.

Generally, the Southeast Asian countries have managed to steer a course on most issues which follows the neutralism of India. The recent swing towards military dictatorships and the decline of democratic institutions in Southeast Asia, however, points to the need for a re-appraisal of Western policy. Western policy has failed in Southeast Asia because it has two fatal misconceptions governed by the conditions of the cold war. Firstly that much of the political, economic and social instability in the area stemmed from Communist subversion and could be stopped by military policies of containment. This is a superficial assessment. It has been the point of this whole article to emphasise that this instability stems primarily from the phase of nation state-building and the introduction of new institutions. Such instability is only to be expected—in fact it is part and parcel of the creation of nation states. Secondly, until the early 1950s, the West failed to realise the need for financial and technical aid, principally because of its desire to stabilise Western Europe. Thus between 1 July 1945 and 31 December 1957 Western Europe received \$24.9 billion in U.S. economic aid while the whole of Asia and the Pacific received \$8.4 billion (of which \$5.4 billion went to Taiwan, South Korea and Japan).<sup>31</sup> Consequently only a small percentage of the United States foreign aid has gone to Southeast Asia. The fact that many of the Southeast Asian countries refused extensive loans from U.S.A. was also an important factor. But even the aid that did arrive was frequently misused because there had been no reform of the countries' social and economic structure to accommodate it.<sup>32</sup> Western policy towards Southeast Asia has therefore not greatly relieved social and political instability.

Today, the emergence of nation states in the non-Western world gives a form of political organisation which can utilise the advanced technology of the Second Industrial Revolution to overcome the problems of poverty, social backwardness and economic underdevelopment which have persisted in these regions for so long. While the Soviet bloc's policy of financial and technical aid to help the economic and social development of the state does not involve any overt attempts to change the institutional structure of the state, the policy of the West seems still largely concerned with attempting to prop up political institutions which resemble its own. Such a policy reveals an arrogant belief in the supremacy of Western-style institutions, as well as a complete misunderstanding of the Southeast Asian situation. Containment, the attempt to freeze existing political institutions for the sake of

<sup>31</sup> *New York Times*, 7th December, 1958: 5.

<sup>32</sup> "According to a report in the *Wall Street Journal* of 8th September, total United States military and economic aid to Laos over the last five years has amounted to \$225 million, but a large part of the military equipment thus supplied has 'rotted into uselessness' through mishandling and neglect." *Monthly Review*, October 1959, 184.

political stability, and a trickle of foreign aid are only stopgap measures provoked by the conditions of cold-war diplomacy. It is indeed only through social and economic change on a massive scale, through modernisation of outmoded economic and social systems and by (often unsuccessful) experimentation with new forms of political organisation that stability will ultimately be reached. The phase of nation-building is the inevitable end-product of the Western impact and the desire of Southeast Asian societies to assert their independence in the World Community and, above all, to shape their own destiny. The West would do well to realise the characteristics of such a period of political instability and adapt its policy accordingly.

## REFERENCES

- Ball, MacMahon W., 1956, *Nationalism and Communism in East Asia*, Melbourne.
- Benham, Frederic, 1956, *The Colombo Plan and Other Essays*, London.
- Bois, Cora du, 1949, *Social Forces in Southeast Asia*, St. Paul.
- Broek, Jan O. M., 1944, "Diversity and Unity in Southeast Asia", *Geographical Review*, 24, 2, April 1944, New York, pp. 175-195.
- , 1954, "Resources of the Tropics: Southeast Asia", in *Focus* (Amer. Geog. Socy.), IV, 6, New York.
- Bulganin, N. A. and Khrushchov, N. S., 1955, "Full Texts of Speeches and Statements in India, Burma and Afghanistan", in *Soviet News*, London.
- Buss, Claude A., 1958, *Southeast Asia and the World Today*, Princeton, N.J.
- Carnell, F. G., 1958, "Ethnic and Cultural Pluralism in Burma, Thailand and Malaya", in *Ethnic and Cultural Pluralism in Intertropical communities* (Report of the 30th Meeting, International Institute of Differing Civilizations held in Lisbon, 1957), Brussels.
- Coleman, James S., 1958, *Nigeria—Background to Nationalism*, Berkeley.
- Department of External Affairs (Wellington), 1958, *The Colombo Plan: Seventh Annual Report of the Consultative Committee on Economic Development in South and Southeast Asia*, Wellington.
- Department of State Publication 6632, 1958, "The Sino-Soviet Economic Offensive in the Less Developed Countries", *European and British Commonwealth Series*, Washington.
- Deutsch, Karl W., 1953, "The Growth of Nations: Some Recurrent Patterns of Political and Social Integration", in *World Politics*, V, 2, Princeton, pp. 168-195.
- Dobby, E. H. G., 1950, *Southeast Asia*, London.
- Eickstedt, Egon von, 1944, *Rassendynamik von Ostasien*, Berlin.
- Fisher, C. A., 1950, Chap. III, "Southeast Asia", in *The Changing Map of Asia*, London, pp. 188-235.
- , 1956, Chap. XXVI, "Mainland Southeast Asia", and Chap. XXVII, "The Malaysian Realm: Indonesia, British Southeast Asia and the Philippines", in *The Changing World*, London, pp. 624-681.
- Fryer, D. W., 1957, "Economic Aspects of Indonesia Disunity", in *Pacific Affairs*, 30, 3, Richmond, pp. 195-208.
- Gottman, Jean, 1951-52, "The Political Partitioning of Our World", in *World Politics*, 4, Princeton, pp. 512-519.
- Geer, Sten de, 1928, "The Subtropical Belt of Old Empires", *Geografiska Annaler*, 10, 3, Stockholm, pp. 205-244.



- Hartshorne, R., 1950, "The Functional Approach to Political Geography", *Annals Association of American Geographers*, XL, 2, Lawrence, Ka., pp 95-130.
- , 1954, Chap. VIII, "Political Geography" in *American Geography—Inventory and Prospect*, Syracuse, pp. 167-225.
- Hauser, Philip M., 1957, "World and Asian Urbanization in Relation to Economic Development and Social Change", *UNESCO Technology Series*, Calcutta.
- Jacoby, Erich H., 1949, *Agrarian Unrest in Southeast Asia*, New York.
- Kahin, George McTurnan (ed.), 1959, *Governments and Politics of Southeast Asia*, New York.
- Limbourg, Michel. 1956, "L'Economie Actuelle du Vietnam Démocratique", Hanoi.
- Mills, Lennox A., and Associates, 1949, *The New World of Southeast Asia*, Minneapolis.
- Panikkar, K. M., 1959, *The Afro-Asian States and their Problems*, London.
- Pauker, Guy T., 1959, "Southeast Asia as a Problem Area in the Next Decade", *World Politics*, 11, 3, Princeton, pp. 325-345.
- Rose, Saul, 1959, *Socialism in Southern Asia*, Oxford.
- Thayer, Philip W. (ed.), 1953, *Southeast Asia in the Coming World*, Baltimore.
- Thompson, Virginia and Richard Adloff, 1955, *Minority Problems in Southeast Asia*, Stanford.
- Toynbee, Arnold, 1953, *The World and the West*, Oxford.
- U.N.O. Department of Economic Affairs, 1950, "Economic Survey of Asia and the Far East, 1949", *Economic Commission for Asia and the Far East*, New York.
- U.N.O., 1953, *Economic Survey of Asia and the Far East, 1952*, Bangkok.
- Whittlesey, Derwent, 1939, *The Earth and the State*, New York.
- Wittfogel, Karl A., 1950, "Russia and Asia: Problems of Contemporary Area Studies and International Relations", in *World Politics*, 2, 4, Princeton, pp. 445-462.
- , 1957, *Oriental Despotism*, New Haven.

#### SOURCES OF MAPS

- Figure 1—Eicksted (1944): p. 319; Vlekke, B. H. M., 1943, *Nusantara: A History of the East Indian Archipelago*, Cambridge, Mass., p. 55.
- Figure 2—After Spencer, J. E., 1954, *Asia, East by South*, New York, p. 154.
- Figure 4—Based partly on a map, "Resources Agricoles, Minières et Industrielles de L'Asie du Sud-Est", in *Géographie Universelle Larousse*, 1959, Paris.
- Figure 5—Fisher (1956): pp. 648-651; pp. 676-680; Kahin (1959): p. 450; Purcell, V., 1951, *The Chinese in Southeast Asia*, Oxford, p. 210; Carnell (1958): pp. 410-411.
- Figure 6—Hauser (1957): p. 101; *U.N.O. Demographic Yearbook, 1957*, New York, p. 150.
- Figure 7—*Keesings Contemporary Archives, 1946-1958*, London.
- Figures 8, 9, 11—After maps in Fryer, D. W., "World Incomes and Types of Economies: The Pattern of World Economic Development", *Economic Geography*, 34, Oct. 1958, Worcester, Mass., and George, Pierre, 1951, "Introduction à l'Étude Géographique de la Population du monde", p. 23, Paris.
- Figure 10—UNESCO, 1957, *World Illiteracy at Mid-Century*, Paris, p. 201.

# The Nature of Shifting Cultivation

## *A Review of Recent Research*

R. F. WATTERS

IN recent years the steadily mounting spiral of world population and consequent shrinkage of per capita living space has compelled man to reassess the inherent qualities of the world habitat and to examine critically its potentialities for development in the light of existing economic systems and levels of technology. In particular, the environments and the economies of the humid tropics have come under close scrutiny, for this region, comprising forty-four per cent of the world's land area but containing only twenty-one per cent of its population, is often regarded as being one of the last remaining "empty lands" of the globe. An impartial consideration of population densities and of widespread poverty provides ample justification for attempts at large-scale development of the "ecological problem areas" which make up so much of this region in an attempt to increase the productivity of its agriculture. It is significant that the pattern of population distribution within the humid tropics is markedly uneven and that the inhabitants are supported by the cultivation of a very small proportion of the total area. Thus in the Belgian Congo only one per cent of the area is cultivated, and the agricultural density<sup>1</sup> is 400 per square kilometre. In Brazil the figures are two per cent and 250 per square kilometre, while even in India only thirty per cent is cultivated with an agricultural density of over 360.<sup>2</sup> A large part of the area that is cultivated, however, is utilised under various forms of shifting cultivation—an agricultural system, mainly at subsistence level, that is characterised by impermanent use of the land.<sup>3</sup> In 1957, the area under shifting cultivation was estimated at 14,000,000 square miles—an area inhabited by some 200 million people at an average density of only fourteen to the square mile.<sup>4</sup> Largely as a result of the low carrying capacity of most forms of shifting cultivation, and the deleterious effects to the environment that accrue when this capacity is exceeded, officers of the F.A.O. have appealed for co-ordination among research specialists and field workers in renewed attempts to

*R. F. Watters is Lecturer in Geography of Victoria University of Wellington.*

<sup>1</sup> That is, the total number of inhabitants, urban and rural, reported for the cultivated area.

<sup>2</sup> Gourou (1956): 337.

<sup>3</sup> A fuller definition is given below.

<sup>4</sup> F.A.O. Staff (1957): 9.

overcome the problems associated with shifting cultivation. They assert that shifting cultivation in the humid tropics is

"... the greatest obstacle not only to the immediate increase of agricultural production, but also to the conservation of the production potential for the future in the form of soils and forests."<sup>5</sup>

Stronger expressions of this view condemn the system as being wasteful or illegal, judging it to be not only a backward type of agricultural practice but symptomatic of a backward type of culture in general.

Such a view is widely held amongst agronomists and forestry officers who are concerned largely with environmental aspects of shifting cultivation. An opposing view is held by many social scientists who see man and his way of life as the prime factor in the situation and conceive of agricultural systems largely in terms of the cultures which they exemplify. This view may be represented by Carl Sauer who has upbraided the modern industrial West for its insensitiveness to other ways and values:

"We present and represent to the world a blueprint of what works well with us at the moment, heedless that we may be destroying wise and durable native systems of living with the land."<sup>6</sup>

With some qualifications, Sauer finds shifting cultivation, "in its basic procedure and crop assemblages", to be

"... most conservative of fertility at high levels of yield; that, being protective and intensive, we might consider it as being fully suited to the physical and cultural conditions of the areas where it exists."<sup>7</sup>

Such conflicting interpretations of shifting cultivation prompt this fresh survey, which is based largely on a review of recent work and in part on field work in Samoa and Fiji. Most forms of shifting cultivation have distinctive local characteristics, though basic uniformities are evident from several recent field investigations, and this encourages an attempt to ascertain the real facts that lie behind the system as a whole. At the same time suggestions will be made as to directions in which research could profitably be made. In view of the wide scope of the paper generalisations have to be made; it is inevitable that some of them will not apply to some forms of shifting cultivation.

#### CONCEPTS

What concept is most fruitful to understand the essential nature of shifting cultivation? The subject needs a methodology of its own appropriate to its elements and their patterns of relationship. Primarily it must be one which recognises that any system of agriculture stands in

<sup>5</sup> F.A.O. (1957): 9.

<sup>6</sup> Sauer (1956): 68.

<sup>7</sup> Sauer (1956): 57.

direct relationship to environing nature on the one hand, and to the culture of the occupants on the other. No interpretation will be adequate if it fails to give due weight to both the organic and supraorganic factors that form the interrelated complex of features that characterises agriculture in visible form on the land. In considering advanced agricultural systems in which the cultural (including economic) factors may not be much influenced by those of the local environment this view resolves itself to some extent into a dichotomy. In shifting cultivation, however, man's "margin of freedom" from the coercive circumstances of the environment is less great, and he is usually best regarded as being a part of nature rather than apart from it. Indeed, it is true to say that the patterns of life of most groups of shifting cultivators are more readily understood if they are seen in their environmental context. As de Schlippe has said, "... the teacher of a culture is its environment and agriculture is its classroom".<sup>8</sup>

Within this preliminary frame of reference, a survey of the concepts employed in the literature on shifting cultivation reveals two approaches that are particularly illuminating—those of Pierre de Schlippe in his *Shifting Cultivation in Africa*, and of Harold C. Conklin in *Hanunóo Agriculture*. De Schlippe sees the agricultural system of an ethnographic unit as

"... the customary pattern of behaviour followed by the individual members of the unit in the realm of agricultural technology which results in typical sets of:

- (1) Land utilization in space (pattern of field types in their respective ecological backgrounds);
- (2) Land utilization in time (pseudorotations);
- (3) Seasonal distribution of labour;
- (4) Seasonal distribution of nutrition and other needs."<sup>9</sup>

While the qualities of the environment are dominant in his approach, de Schlippe sees traditional agriculture as the "most important part of", and indeed "almost synonymous with, the culture as a whole in its function of ensuring the survival of the group in its habitat".<sup>10</sup> The emphasis of Conklin (an anthropologist) is less on the environment, and more on the cultural context in which the economy of the society has evolved. In taking an "ethnoecological" approach<sup>11</sup> he emphasises

"... not only the local environmental conditions and their apparent modifications, but especially the determination of how these conditions and modifications are culturally interpreted."<sup>12</sup>

<sup>8</sup> de Schlippe (1956): xii.

<sup>9</sup> de Schlippe (1956): 238.

<sup>10</sup> de Schlippe (1956): 241.

<sup>11</sup> Conklin (1957).

<sup>12</sup> Conklin (1954): 133.

It is abundantly clear from these masterly works that a structural approach sheds much light on the range of environmental and cultural elements involved in this agricultural system. In itself, however, this would lead to a static view. Study of the operation of any form of shifting cultivation over a period of time throws light on the functional role of the various elements in the whole system and the degree of integration that exists among them. Thus such elements as soil and vegetation types, climatic season, traditional practice and economic orientation all have a character of their own (which is seldom static) which influences the total pattern at each stage of cultivation, while at the same time they are orchestrated together in the whole ecosystem to produce distinctive cadences of activity.

This ecological approach which stresses both structure and function provides us with an illuminating working hypothesis by means of which the innumerable features of shifting cultivation can be ordered in a manner that appears to correspond to their associations in reality. It facilitates study of shifting cultivation both as an agricultural system in the landscape, and as that level or dimension of culture most closely related to the environment.<sup>13</sup> While it is essentially holistic in its inclusion of all aspects of the system, it does not prevent preferential consideration of a narrow range of factors which may produce deleterious effects on the environment and economy and thus create a critical situation in which shifting cultivation can no longer operate efficiently.

There is one limitation of this approach, however, that must be guarded against: cultures of shifting cultivators vary widely in their degree of adaptation to the environment. Not all sectors of culture are connected with adaptation for survival, and culture as a whole has a fair measure of autonomy. As Robert Redfield has noted, "human mental life has a structure of its own" and many aspects of culture, including some agricultural features, may be difficult to describe purely in terms of their "connections with the land and the rain and the trees".<sup>14</sup> On the whole, however, when studying societies at subsistence level, the ecological approach holds good since food production generally consists of " . . . an uninterrupted and interlocked chain of functions from the first clearing of a field to the actual cooking process".<sup>15</sup> In short, the ecological framework is particularly valuable if used with care and rearranged or modified to fit the facts of each distinctive environment and culture and the resulting character of agriculture in the "contact zone" in between.

<sup>13</sup> Watters (1958).

<sup>14</sup> Redfield (1955): 31.

<sup>15</sup> de Schlippe (1956): 89-90.





Photo: R. F. Watters

Fig. 1. Clearing climax forest—the first stage of the cycle. Koro Island, Fiji.



Photo: R. F. Watters

Fig. 2. Burning degraded second growth bush prior to planting—the second stage of the cycle. In the background is mission grass (*Pennisetum polystachyon*) a fire-induced climax. Nalotawa, Viti Levu, Fiji.

## WHAT IS SHIFTING CULTIVATION?

Of the many definitions of shifting cultivation, that of Pelzer in 1958 is possibly the most meaningful, for it not only elucidates some of its most distinctive characteristics as an agricultural system but at the same time seems to cover all its variant forms. A slight modification to include some reference to technology appears to be desirable: *Shifting field agriculture is characterised by a rotation of fields rather than of crops, by short periods of cropping (one to three years) alternating with long fallow periods (up to twenty years or more, but often as short as six to eight years), by clearing by means of slash and burn, and by use of the hoe or digging stick, the plough only rarely being employed.*<sup>16</sup> Forms with short fallow periods fall within this definition, although it is useful to follow Faulkner and Mackie in distinguishing as "rotational bush fallow" those which have fallow periods of not more than six to eight years.<sup>17</sup> Such a distinction facilitates understanding of the special needs of this type, in which relatively high densities of population often denote a degeneration of the natural vegetation and decline in soil fertility.

Such a system of agriculture has varying appearances in the landscape. In a forested area the landscape frequently has a pock-marked appearance (Fig. 1) with agricultural clearings (termed "swiddens"<sup>18</sup>) appearing haphazardly here and there amid the dominant green of the vegetation, or perhaps spreading outward in bubble-like patterns from the compounds of a settlement. In between the swiddens, brushy thickets of varying height and density (termed *belukar* in Indonesia<sup>19</sup>) indicate former fields or gardens now regenerating.

Contrasts between any two groups are readily discernible in such features as the size or shape of clearings, crop assemblages, and methods of cultivation. Fuller cross-cultural study of forms of shifting cultivation reveals many differences but some similarities in basic characteristics. Differentiation of these societies can be done in several different ways, each useful for specific purposes.

<sup>16</sup> Pelzer (1958): 126. This is a slightly refined version of that of Pelzer (1945): 17. Another useful definition is that of Buchanan and Pugh (1955): 103.

<sup>17</sup> Faulkner and Mackie (1933): 44. Morgan (1957): 4, and (1959): 138-150, and Watters (in press) also make this distinction.

<sup>18</sup> Conklin (1954) and (1957) has followed Izikowitz (1951): 7, in using the term "swidden", the English dialect word for burned clearing. His reason is that it "lacks regionally linked specific associations" (p. 1). Pelzer (1958): 127, also accepts the term in preference to local names or such descriptive terms as "shifting field", "slash-and-burn clearing". For these reasons the term will be used here. For an etymological discussion of the word, see Eckwall (1955): 135-136.

<sup>19</sup> van Beukering (1947): 248.

## TOWARDS A CLASSIFICATION

Classification must be based, primarily, on differences in economy in respect to sources of food production. The following major types may be distinguished:

- (1) Predominantly hunters and gatherers, but practising shifting cultivation to a small extent.
- (2) Depending mainly on shifting cultivation, although indulging in some hunting, fishing or gathering.
- (3) Depending almost entirely on shifting cultivation, with almost no other source of food production.
- (4) Predominantly pastoralists, but also practising some shifting cultivation.
- (5) Depending mainly on shifting cultivation with some pastoralism.
- (6) Depending mainly on shifting cultivation but with some permanent form of cultivation.
- (7) Some shifting cultivation, some permanent cultivation and also some pastoralism.
- (8) Depending mainly on some permanent form of agriculture with some shifting cultivation.

Many examples of each type occur in tropical Africa, Southeast Asia and Central America. Thus the food gathering Vedda of Ceylon, who replace a portion of plant stock when gathering, represent a backward form of Type 1.<sup>20</sup> The Boro people on the Japura River in the western Amazon forest are an example of a group based on the cultivation of cassava in shifting clearings supplemented by hunting.<sup>21</sup> Of societies that depend almost completely on shifting cultivation, the Hanunóo of Mindoro Island in the Philippines are an example that has received thorough study.<sup>22</sup> The Munda people of Bengal may be taken as an example of pastoralists who also practise some shifting cultivation of millets and a little rice.<sup>23</sup> The fifth type may be illustrated by the Palaung people of Burma, who depend mainly on the shifting cultivation of rice (and in addition plant tea), although they also keep cattle.<sup>24</sup> The tuber-oriented peoples of Melanesia and Polynesia may be taken as illustrations of Type 6, for in addition to shifting gardens they also have permanent groves of tree crops and semi-permanent plots near the village. Other examples occur in many parts of Indonesia, where

<sup>20</sup> Bews (1933): 186. The Ainu of Hokkaido, Japan, are an often quoted example from outside the humid tropics who also appear to have been emerging from the hunting stage to that of agriculture.

<sup>21</sup> Daryll Forde (1934): 131-147, based on T. Whiffen, *The North-west Amazons*, London, 1915.

<sup>22</sup> Conklin (1957).

<sup>23</sup> Terra (1953): 444.

<sup>24</sup> Terra (1953): 444.

wet rice cultivation and perhaps mixed gardens containing a variety of tree and ground crops supplement the shifting cultivation of dry rice, while in Africa many examples can be found of shifting cultivators who have practically permanent subsidiary gardens near their settlements. In areas that experience a lengthy dry season (as in parts of eastern Indonesia) pastoralism is often important, and where some land is available for irrigated rice, a broader economic base supplements (and in favourable areas may supplant) shifting cultivation (Type 7). These forms are frequently similar to the former infield-outfield systems of the Celtic uplands, with the infield kept in permanent cultivation by the use of the manure of animals kept near the houses. Type 8 is found on soils that are perpetually refertilised by alluvial deposits or which can be readily irrigated enabling permanent cultivation (mainly of wet rice in Southeast Asia) for the main source of food, with supplementary supplies coming from shifting swiddens on the less fertile hills (e.g., the Sakai of Malaya).

A merit of this classification is that it throws light on possible courses of cultural evolution. Thus the first three types may possibly stand in some evolutionary relationship to one another; and so perhaps do 4, 5, 6 and 7. In the upper Orinoco Basin of Brazil, for example, a cultural sequence may possibly exist between the hunting and gathering Guaharibos who plant only bananas and the nearby Maquiritaes who have a fully developed form of shifting cultivation.<sup>25</sup> Generalisations on cultural evolution, whether based on unilinear or multilinear theory, are dangerous, however, at our present state of knowledge, as they depend essentially on cross-cultural (and cross-environmental) comparisons of selected cultural traits taken out of their ecological contexts. Many agricultural systems that appear to form evolutionary sequences may be explained when more is known about diffusion patterns and the factors that determine the acceptance of immigrant culture traits.

An interesting classification by Conklin<sup>26</sup> bears some relation to the above approach, but is much more concerned with the degree to which shifting cultivation is integrated with other forms of agriculture in any given "sociocultural matrix". The term "partial systems" is used to describe those in which cash cropping, or other form of commercial agriculture, occurs with shifting cultivation. A further subdivision is made into the "supplementary" sub-type, where a predominantly permanent field cultivator has some swiddens, and the "incipient" sub-type, which refers to the beginnings of full-time shifting cultivation by a settler moving into an upland area, usually from an overpopulated permanent-field area. In contrast to partial systems, "integral" ones are defined as stemming from a "more traditional, year-round, com-

<sup>25</sup> Gheerbrant (1953): 224.

<sup>26</sup> Conklin (1957): 2-3.

munity wide, largely self-contained and ritually sanctioned way of life". These have two sub-types: "pioneer" shifting cultivation, where significant areas of climax vegetation are usually cleared annually, and "established" shifting cultivation, in which tree crops are plentiful and practically no climax vegetation is cleared each year.

The merit of Conklin's approach lies in its recognition of the frequent association and integration of diverse forms of agricultural production. For further refinements of classification, Conklin suggests the use of ten criteria: principal crops, crop associations and successions, crop-fallow time ratio, dispersal of clearings, use of livestock, tools and techniques, treatment of soil, vegetation cover of land cleared, climatic conditions, and soil conditions.<sup>27</sup> To these inter-dependent variables two more may be added: the density of population on cultivable land, and the type of settlement pattern.<sup>28</sup> Although these are to some extent dependent upon some of Conklin's variables, their fundamental importance in affecting the total occupance pattern and long-term land usage is such that they merit separate consideration.

This classification does not, however, emphasise the most distinctive and significant feature of shifting cultivation—its shifting character. In view of the relatively low densities of population that this extensive system can permanently support in any region, a classification which makes meaningful distinctions in terms of patterns of land rotation will be of considerable practical value. The significant differentiation here is between those societies whose settlements shift as well as their fields, and those whose settlements are fixed. This distinction follows in part the approach of Waibel in contrast to that of Pelzer<sup>29</sup>, who argues that the agricultural system may be essentially the same in each case. In adopting a wider view, full recognition is given to the man-land relationship throughout the whole territory ranged by the cultivator. At the same time, permanency of settlement often marks a rather higher cultural level at which a firm basis exists for elaboration of culture. It also marks a type of relationship with the environment that is perhaps nearer to permanent cultivation.

Of those societies who shift their settlements as well as their fields, a useful distinction can be made between long and short cycle migration. While there is on the whole a paucity of detailed information on ethnoecological conditions of cycle migration, it is clear that the shifting of settlements as well as fields denotes the operation of two cycles of

<sup>27</sup> Conklin (1957): 2.

<sup>28</sup> Watters (in press).

<sup>29</sup> Waibel, L., "Die Europäische Kolonisation Südbraziens", *Colloquium Geographicum*, 4, Bonn, 1955, cited in Pelzer (1959): 127. In addition to Waibel, Morgan (1957) proposes the restoration of the term shifting cultivation to groups with nomadic settlement as well as cultivation.



soil degradation of two distinct durations.<sup>30</sup> In the shorter cycle, declining yields or increasing weeds compel the cultivator to shift his fields. Rotation of all cultivable land within reasonable walking distance of the settlement is not sufficient, however, at existing levels of technique to prevent loss of soil fertility, compelling migration of the whole community to a new area that is fully restored. De Schlippe has referred to the pressure of a niggardly environment as the "force majeure" which governs these movements, interposing a serious obstacle in the way of progress.

Short cycle migration is practised by the Lala, on the overpopulated and generally infertile Serenje plateau of Northern Rhodesia, who move an average distance of five miles once every 5.5 years.<sup>31</sup> In the Equatoria Province of the Sudan, the Azande also practised a short cycle migration, moving perhaps as often as five times in fifty years.<sup>32</sup> The periodic dying of their homesteads corresponds to a rhythm of which the people are not entirely conscious, for they move in response to repeated misfortunes of a social nature as much as to such tell-tale signs as repeated crop failures. The importance of cultural as well as physical factors has been argued by Izikowitz with regard to the Lamet of Laos in view of the fact that their settlements seldom reach their maximum size.<sup>33</sup> The influence of the environment appears in many societies to be translated into the body of culture and re-expressed in muted form in the institutional conditions of society, appearing perhaps in the form of sorcery and in various expressions of social tension.

A vivid description of long cycle migration has been provided by Ursula Bower,<sup>34</sup> who lived with the Zemi people, a sub-tribe of the Nagas of Assam. This people lived in extremely steep forested country, in which land suitable for *jhuming* was widely dispersed on slopes on which cultivation was for the most part physically impossible or quite uneconomic. In this instance, the evolution of cycle migration appears to be explained by the nature of the terrain together with the intense rivalry for land that existed between warring sub-tribes, rather than by the absence of effective methods of population control. The Zemi followed a cycle of over two hundred years' duration, consisting of a progression around acknowledged sites. With the coming of the Pax Britannica, immigrant peoples settled on Zemi long-term fallow land. The tracts of land claimed by the Zemi seemed to the Government to

<sup>30</sup> de Schlippe (1956): 213.

<sup>31</sup> Peters (1950): 51.

<sup>32</sup> de Schlippe (1956): 192.

<sup>33</sup> Izikowitz (1951): 361. Izikowitz's method may be questioned, however, as in working out the area needed to support a village of 150 people he counts all land as potentially cultivable.

<sup>34</sup> Bower (1952): 135-141.

be grossly excessive and all land that they were not currently occupying was awarded to another sub-tribe. The economic and environmental consequences of administrative ignorance have been catastrophic: progressive over-cultivation, forest recession, accelerated erosion, fusion of settlements in a vain search for space, chronic food shortage, and consequent boundary troubles and social and political tension.<sup>35</sup>

#### THE PHASES OF SHIFTING CULTIVATION

A classification of the varying types can concern itself merely with differences in major features. While this extensive approach sheds light on some basic features, a more intensive ethnoecological approach must supplement it. The structure and function of the innumerable elements in any system are more clearly seen in a study of the yearly round of agricultural activities. These fall into six distinct phases—choosing the site, clearing the land, burning, planting, cultivation and harvesting. While a very broad range of variation occurs in the patterns of activity at each phase, some basic or very common features are apparent in most of these phases.

##### *Selection of Sites*

The cycle of cultivation in any community commences with the selection of sites for the swiddens. Considerations determining the site commonly express local evaluations of the soil requirements of the crops to be planted. Many societies have evolved a rudimentary classification of soil types, arising from their collective experience over centuries. Classification is generally based on the recognition of certain trees and grasses as indicators of soil type, or on variations in the colour and texture of soils.

In studying the Bemba people of Northern Rhodesia, Audrey Richards found soil selection practised only by the old or more efficient cultivators, whose knowledge was acquired through experience. The process was described to her "as learning how to understand the things of the soil or the trees of the bush". The Bemba method of land selection, however, still left a wide margin for possible failure, and the regular testing of the soil by trial and error was part of their traditional practice.<sup>36</sup> The threat of failure also haunts the Hanunóo of the Philip-

<sup>35</sup> When the administration realised the nature of the situation it launched a campaign for the introduction of permanent agriculture in the form of wet rice terracing. Unfortunately this failed due to a change in Deputy Commissioners, inefficient demonstration resulting in broken irrigation channels and consequent loss of crops, and the potency of local superstition, which held that the use of water in one's fields caused death by dropsy. As a result, soil destruction and acute poverty continued unabated, with the opportunity of wage labour on the fields of neighbouring tribes offering no real solution.

<sup>36</sup> Richards (1939): 287, 283.

pinus, in spite of their intimate knowledge of local forms of vegetation and their much more bountiful environment and broader economic base. Thus local augury, dreams and omens play an important part in supplementing local knowledge of the environment.<sup>37</sup>

If primary forest is available, it seems generally to be chosen in preference to secondary forest on account of its deeper humus and greater soil fertility. However, secondary forest is preferred by some groups who find primary forest difficult to clear. A shortage of manpower for clearing may also lead to choice of second growth bush. Felled primary forest also requires a longer drying period before burning can commence, if a relatively complete burn is desired. Some groups in Sarawak regularly fell a proportion of old growth as well as new canopy forest.<sup>38</sup> However, in most areas today little or no virgin vegetation is available, and various forms of rotation exist, with choice of site generally falling on land where the structure of vegetation indicates the longest fallow period. Thus, in Samoa, land would not be reused until the branches were "as thick as a man's arm".<sup>39</sup> Migrant cultivators frequently choose former village sites, where accumulated refuse and remnants of thatch give superior fertility.

Economic factors are significant in affecting the radius of agricultural operations. Frequently choice is made of a site close to the village in preference to a superior one several miles distant. However, the necessity to use the best land available is very common, and this often leads to subsidiary or temporary houses being built on distant fields to avoid travelling. Social factors can also play a part, where the cultivator prefers to cut his clearing in an area near other members of his kinship group. Tribal authority also may be exerted in the matter of choice with chiefs often having first preference<sup>40</sup> or even sometimes directing a general distribution.

### *Clearing*

The selection having been made, clearing follows, usually at the beginning of the dry season. Although some people burn first if the vegetation is inflammable, it is more common to clear first and leave the debris to dry for a month or two prior to burning. If the region is not forested, cutting of grass tops and scrub is generally done much later in the dry season and then followed immediately by burning. Large trees are often killed first by ring-barking or firing at the base and then smaller trees and undergrowth slashed. Some groups completely clear the ground, others leave smaller trees intact to speed regeneration, while in some

<sup>37</sup> Conklin (1954): 135.

<sup>38</sup> Leach (1950): 89.

<sup>39</sup> Brown (1910): 339. See also Leach (1950): 90.

<sup>40</sup> Richards (1939): 267.

systems trees are merely pollarded. Commonly felling is done at waist height or just above the flaring buttresses. It appears that there may be some relation between the extent of clearing and the importance of wood ash as a fertiliser in the agricultural practice of the group in question.

The size of clearings varies considerably, depending largely on the overall limiting factor of population density. Within the context of population density, other factors are effective: the number of people to be fed from the one garden (the "garden family"<sup>41</sup>), the fertility of the soil, the ease of clearing, and the size and energy of the labour force. In partial systems which have other forms of food production or sources of cash income, the size of clearings is commonly smaller than with the true or integral shifting cultivator. In fertile parts of Samoa and Fiji, three or four plots of only one-tenth of an acre are often sufficient to provide a family's wants where there is a little cash cropping, while on the other hand two or three clearings totalling fifty acres may be needed in infertile areas or where the garden family considerably exceeds the natural family in size.

### *Burning*

Burning is done generally late in the dry season when the cut timber is sufficiently dry to secure a good burn. Patterns of burning reflect differing adjustments to the land, varying from firings aimed primarily at the destruction of debris to provide space for planting as in some Oceanic forms, to the burning of carefully stacked circles of timber in the *Chitemene* forms, which ensure a concentrated distribution of fertilising ash and the use of soils that would otherwise be uncultivable. In these latter forms only about ten per cent of the area felled may be burnt and not all of the burnt area is planted. Felled timber is stacked in circles of varying size, depending on the amount of ash needed to secure a good crop. The percentage of border wastage varies considerably, reaching the very high average figure of about thirty per cent with the Lala of Northern Rhodesia.<sup>42</sup>

The success of the burn depends on the thoroughness of the cutting activities, the type of vegetation, and, in particular, the weather conditions. Thus, the Iban of Sarawak prays:

"In health and happiness may we dwell in this land; and when we fire our farms may they fiercely burn; it is for a drought that we plead."<sup>43</sup>

Sometimes secondary and even tertiary burning is necessary in humid areas to destroy all debris, for crop yields bear a direct relation to the completeness of the burn in view of the destruction of insect pests, and in particular, the resulting increased availability of valuable plant

<sup>41</sup> Allan (1949): 7.

<sup>42</sup> Peters (1950): 37.

<sup>43</sup> Freeman (1955): 44.

nutrients in the upper soil horizons.<sup>44</sup> Moreover, a good burn will break up hard lateritic surfaces, and obviate some preliminary working of the soil.<sup>45</sup> As the Iban says: "If the farm be completely burnt, then the padi wants to grow."<sup>46</sup>

Man's relation to the land is indeed mirrored in his use of the torch as an agricultural tool. Where firebreaks are cut and rigid precautions are taken against spreading of the fire, a traditional sense of conservation is evident.<sup>47</sup> Magico-religious beliefs also often buttress traditional techniques. In many instances, the shifting cultivator has, however, been condemned for the transformation of forest land into sterile grassland. It is true that some societies in thinly settled regions are particularly prodigal or careless in their use of land resources; thus the Iban of Sarawak have been described as "mangeurs de bois". Almost limitless tracts of primeval rain forest in the Rejang basin have induced the Iban to regard it as an expendable resource since they conquered the region over a century ago.<sup>48</sup>

### *Planting*

The penetration of religious beliefs into agricultural practice is particularly evident at planting times, when use is made of supplicatory rites to guardian spirits, or propitiatory offerings to evil ones. In areas where rainfall is seasonal, planting is timed to take full advantage of the rains. In the planting patterns that follow the ingenuity of the shifting cultivator is most strikingly displayed.<sup>49</sup> In most areas he has learnt to simulate the conditions of the forest cover, by planting an association of crops that grow in tiers of varying height and structure to intercept the falling rain, cover the ground and take advantage of different light conditions.<sup>50</sup> Root systems of annuals are commonly well developed to tap available nutrients before they are leached away. The result is an apparent disorder, for the cultivator "embroiders his agricultural activity on a canvas and pattern provided for him by nature".<sup>51</sup> To the European's conceptions of geometrically patterned fields and

<sup>44</sup> Joachim and Kandiah (1948): 3-11; Frith (1955): 183; Watters (1958): 347.

The effects of burning lie outside the scope of this paper.

<sup>45</sup> Whittlesey (1937): 44.

<sup>46</sup> Freeman (1955): 44.

<sup>47</sup> Conklin (1957): 64-67.

<sup>48</sup> Freeman (1955): 26, 117-118.

<sup>49</sup> Acculturation has often destroyed the purpose behind the practice, and led to views that regard the practice as meaningless or inferior, yet still the practice often remains, buttressed by some traditional ideas. "Yes, those plants are pressing against each other. Each will steal the food of the other. But are we to throw them away? Would not that be a slight to the spirits? Is it not they who gave us the food?" Richards (1939): 307. The writer has commonly noted similar instances in Fijian practices.

<sup>50</sup> Sauer (1956): 57.

<sup>51</sup> de Schlippe (1956): 107.





*Photo: R. F. Watters*

Fig. 3. Intercropping of taro and yams. Small trees have been left to support the yam vines and speed regeneration. Nalotawa, Viti Levu, Fiji.

sense of order (the natural legacy of living in the most transformed landscape of all) the ragged bush line that marks the boundary of the clearing and the confusion of crops lying within it seem to be based on no rationale at all. De Schlippe has ably demonstrated the nature of this rationale—the “hidden order” that gives meaning to the seeming chaos.

The long-continued process of trial and error—of constant improvisation forced on the cultivator by the many circumstances, physical and human, which defeat his plans—has led to the establishment of crop associations in which many crops flourish each in their respective ecological niches, and some indeed could not live apart from it. Slow-growing plants that could not compete with weeds thus find a place

and are integrated into the assemblage. The advantages of growing crops in associations are obvious: it leads to a very high yield per unit area, provides some sort of "insurance value" against failure of individual crops, and ensures food production at various times throughout the year. Out of the immense number of crops that are theoretically possible in the various soil-vegetation types, each region seems to have evolved only a small number of associations adapted to local ecological conditions.

The planting and tending of the "new vegetation" of the clearing is a complex process in forms that have a large crop assemblage. Crops are planted and cultivated simultaneously, or in overlapping fashion, producing in some systems a "constantly changing mosaic of intercropped cultigens".<sup>52</sup> In fact crop successions often form a kind of limited crop rotation, for some crops are particularly suited to the second or third years of cropping. A useful concept for understanding the complexity of planted clearings has been formulated by de Schlippe, who classifies all fields or gardens into a certain number of "field types". A field type

"consists of a combination of a certain number of crops either in the form of an association, with simultaneous or successive sowing dates, or in the form of a succession (within the same season), or of both association and succession. It consists further of certain specific ecological backgrounds, and in the third place it consists of a certain combination of methods of management arranged according to a definite timing."<sup>53</sup>

The cropping patterns of the Azande in the extreme south of the Equatoria Province of the Sudan, are then classed into seven main field types, each in effect being "special environments for specialized crops".

"These environments are created partly by the right choice of the ecological formation, but also by the intentional use of opening methods [clearing, burning and preliminary cultivation] suitable for the crops. The part played by intention is small; that played by circumstance is great. But still, the intention is present and it implies an attempt to overcome the coercive circumstances of nature."<sup>54</sup>

Such a structural arrangement of the elements as de Schlippe has done in his "field types" illustrates the manner in which shifting cultivation is adapted to tropical conditions. Thus Morgan's interpretation of the nature of shifting cultivation<sup>55</sup> is vindicated; adaptation occurs particularly in the choice of crops to be grown, in their associations and successions, and in the agricultural practices required to tend them.

The common belief that shifting cultivation marks a backward level of agriculture and a most inadequate form of subsistence has been re-

<sup>52</sup> Conklin (1957): 72. A cultigen is a crop that is planted by means of placing a portion of the plant (sprout, cutting, root stock) in the ground.

<sup>53</sup> de Schlippe (1956): 117.

<sup>54</sup> de Schlippe (1956): 135 (brackets mine).

<sup>55</sup> Morgan (1957).

futed by Conklin's study of the Hanunóo. These people have up to forty separate crops growing in one swidden at the same time. An "ideal" swidden contained forty-eight basic kinds of plants (or over 250 specific types) including forty-one cultigen food plants and six non-food cultigens.<sup>56</sup> At the same time it is true that many societies do depend on a narrow range of crops, sometimes grown in almost single-crop swiddens. The most outstanding example of what is virtually single cropping is surely that of rice, found in the types of many peoples of upland Southeast Asia and in Sierra Leone and other parts of West Africa.<sup>57</sup> Rice-oriented societies display many differences from other groups of shifting cultivators which appear to be due to the processes of diffusion rather than the working out of any particular local form of adjustment to the environment. The greater food value of rice per unit area in comparison with any other crop is a fact that helps to explain its agricultural dominance and cultural importance and the consequent exclusion of "field types" based on other crops.

### *Cultivation*

Methods of cultivation in the main attempt to preserve the ecological equilibrium of crop associations. Much working of the ground is generally not required as latosols are usually friable in nature, and particularly so after burning. Too much working or ploughing, moreover, may increase the erosion hazard. In many parts of Tropical Africa, mounds and ridges are thrown up to form micro-environments specially suited to the needs of particular crops. Regular weedings and an occasional slashing of vigorous pioneers are necessary until the associations are sufficiently advanced. In areas that experience a dry season, weeds are often left as mulch to conserve moisture and protect the ground.

After a period of cultivation varying from one to two or three years, the benefits accruing from the burn are long since finished and the humus of the former forest floor is seriously depleted. Declining yields then compel the cultivator to abandon the field for a lengthy fallow period. Increase in weeds is also a powerful factor inducing abandonment, being in some areas (e.g., Ceylon) apparently more effective than declining fertility.<sup>58</sup> After the last harvest the swidden is usually completely abandoned, although some societies plant tree crops (e.g., coconuts or bananas in parts of Fiji)<sup>59</sup> which partly determine the vegetative cover during the fallow period. Such a trend brings the cultivator to the transition stage between shifting and permanent cultivation.

<sup>56</sup> Conklin (1954): 138-139; see also Conklin (1957): 72-98.

<sup>57</sup> Paulme (1954); Lewis (1954): 80-94.

<sup>58</sup> Joachim and Kandiah (1948).

<sup>59</sup> Fruit trees and coconuts are planted in Pahang state, Malaya; "Padi Planting Methods in Malaya" (1939): 58. In some forms some ground crops such as cassava are sometimes also left to grow in the regenerating bush.



*Photo: Keith Buchan*

Fig. 4. Swidden in dry forest, Abeokuta Province, Western Region of Nigeria. Maize recently cleared; cassava, pawpaw and mixed vegetables forming discontinuous cover. Stumps left to provide a basis for regeneration.



*Photo: Keith Buchan*

Fig. 5. Ridge cultivation of cassava, Colony Province, Nigeria. Frequent burning and clearing in a heavily populated area has resulted in replacement of climax high forest by palm groves or savannah grasslands.

## THE INFLUENCE OF THE ENVIRONMENT

In 1957 Pierre Gourou posed this question to geographers attending the I.G.U. Conference in Japan:

"Should 'ladang' be considered as linked in a certain measure to tropical conditions? Or is it simply a technological level destined to disappear in the progress of civilizations?"<sup>60</sup>

While Gourou earlier stressed the fact that shifting cultivation is "well adapted to natural conditions", and shows "great understanding of the condition of tropical soils",<sup>61</sup> his interpretation is far from being a naive determinism. In support of the view that shifting cultivation is essentially a product of tropical conditions various authorities have quoted the experience of numerous technologically advanced colonists who have settled on "stable" (see p. 80) or unirrigated soils in the tropics. Finding their intensive methods unsuited to the conditions, they have adopted shifting cultivation. Thus we may cite the well-known example described by Waibel of European immigrants in Brazil adopting the shifting field methods of the local Indians,<sup>62</sup> and Pelzer's reference to immigrant Javanese settlers in the Sukadana colonisation project in South Sumatra who abandoned the traditional sawah culture to which they were accustomed.<sup>63</sup> The nature of environmental influence as an overall determining factor can only be gauged, however, by regarding the environment not merely as the sum of its component elements but as the sum of the relationships that exist within it. It is necessary to examine these elements and relationships therefore before considering the "secondary environment" of cultural level, technology and population density, and the significance of each in the total ecosystem.

*Climatic Conditions*

The essence of the environmentalist's view is that shifting cultivation is a purely tropical phenomenon. There are many well known instances, however, of shifting cultivation being practised in temperate lands, some forms of which still survive to the present day. Examples come from northwest Spain,<sup>64</sup> the Black Forest and other isolated parts of the Hercynian highlands of Germany and Central Europe,<sup>65</sup> and parts of the uplands of Japan,<sup>66</sup> China,<sup>67</sup> and Korea.<sup>68</sup> The survival of these forms since the Neolithic period has been explained by Demangeon as

<sup>60</sup> Gourou (1959): 578.

<sup>61</sup> Gourou (1953): 31.

<sup>62</sup> Waibel (1955) cited in Pelzer (1958): 126.

<sup>63</sup> Pelzer (1958): 126.

<sup>64</sup> van Beukering (1947).

<sup>65</sup> Pfeifer (1956): 252; Pelzer (1958): 127; Darby (1956): 200, 208.

<sup>66</sup> Gourou (1953): 32; Soma (1959): 470-477.

<sup>67</sup> Food and Agricultural Organisation of the United States (1948).

<sup>68</sup> Gourou (1953): 32.



due to the inferior techniques of production and to the low density of population.<sup>69</sup> However, the densities of population in areas of shifting cultivation in Japan and Korea are not always low, and technological backwardness and peasant poverty alone do not appear to be an adequate explanation. On the other hand, Gourou's thesis that the temporary cultivation of burnt outfield land in the temperate belt is a response to the environment similar to that occurring in the tropics, and can only be explained by the poverty of soils and the general steepness of the slopes, appears to be largely borne out. Tropical soils as a whole "evince features that are exceptional in the temperate belt"<sup>70</sup> However, as Pelzer has pointed out, shifting cultivation in Europe survives mainly as an agricultural activity supplementary to some form of permanent agriculture. Thus factors such as an inadequate labour force, extreme poverty and low level of nutrition, effects of chronic disease, and especially inferior technology, also appear to play some part and a rather wider interpretation than Gourou's appears to be desirable. The final answer, however, must await the accumulation of much more detailed and positive data for the comparative study of all these aspects of shifting cultivation in temperate regions.

The most distinctive features of tropical climates in comparison with temperate ones are higher temperatures and higher rainfall. These make for a higher level of plant nutrition, rapid leaching rates, and rapid ageing of the soil system which is expressed in one way by the swift decline in the nutrient supplying power of the soil on cultivation. Shifting cultivation is seen by Wright and Twyford as "one of the methods of the indigenous farmers to adapt to these conditions".<sup>71</sup>

It would seem then that in studying the climates of the humid tropics, attention should be directed at data concerned with leaching rates. Lysimeters actually record the amount of rainfall passing through a column of soil, but comparative data is scanty and of too short a duration. Thus methods have to be devised based on average monthly figures of rainfall, evaporation, transpiration, and runoff to determine the amount of percolation. Experience suggests that Thornthwaite's "potential evapotranspiration" formula is of doubtful validity in the tropics, as there is no assurance that the empirical relations derived from the data of middle latitudes will apply in the tropics.<sup>72</sup> A significant attempt to classify and map tropical soil climates has been made by

<sup>69</sup> Demangeon (1949): 179.

<sup>70</sup> Gourou (1953): 32. Recent pedological research has stressed the close similarity between podsolization and laterisation. Differences are more ones of degree rather than of basic type. See Carter and Pendleton (1956).

<sup>71</sup> Wright and Twyford (1957): 56.

<sup>72</sup> Mohr and van Baren (1954): 60-61; Blumenstock (1958): 7-8. The method of Penman (1940), (1948) and (1956) has not yet been fully tested in the tropics.

Mohr<sup>73</sup> who divided the whole intertropical zone into wet and arid tropics according to whether the rainfall under given conditions of temperature and evaporation produces a downward movement of water through the soil profile or not. The figure of 2.36 inches (60 mm) was the quantity of water considered by Mohr and van Baren<sup>74</sup> to be near the point where evaporation in the tropics accounts for most of the water loss from the soil and runoff and percolation becomes practically zero—i.e., a downward movement of water through the soil ceases and an upward movement commences. Numerous soil surveys have shown that the number of dry months (i.e., with less than 2.36 inches of rain) in any region has a direct bearing on the degree of leaching and thus on the nutrient status of soils (other factors being equal) and in consequence the likely period of cropping that they can sustain.<sup>75</sup> Thus in Fiji a classification by Wright and Twyford based on Mohr's method divides the group into six climatic regions according to the length of the dry season. This division is shown to be meaningful in the classification of soil types as zonal qualities are generally dominant. The writer's own field work in various areas of the wet and dry zone in Fiji confirmed this approach, as it would seem that the lower leaching rates are directly responsible for the longer cropping periods that occur in the dry zone (up to over five years at Nalotawa, Mba) in comparison with generally shorter periods in the strongly leached wet zone areas.

### *Soil Conditions*

The nature of shifting cultivation can most readily be appreciated when the character of tropical soils is considered. While an immense range of types exists, depending on parent material, slope, age and organic matter, the zonal imprint is generally apparent. While true laterites are uncommon, the universal process of laterisation is everywhere going on and shifting cultivation is a response to the transient nature of nutrient supply in these characteristic latosols.

In general, only four classes of soils in the humid tropics are sufficiently fertile to support permanent agriculture without difficulty. These are soils occasionally rejuvenated by additions of volcanic ash; steepland or unstable soils where an effective "inorganic cycle"<sup>76</sup> is operating;

<sup>73</sup> Mohr (1933-38): 53-60.

<sup>74</sup> Mohr and van Baren (1954): 65.

<sup>75</sup> Other tropical climatic classifications that are significant for agriculture are those of F. H. Schmidt and J. H. A. Ferguson (*Verh. Meteor. Observ.*, 42, 1951) and W. van Bemmelen (Boerema, J., 1931, *Verh. Magn. Meteor. Observ. Weltevreden*, 23, 1931, p. 25). The former is an improved refinement of Mohr's method, while the latter adopts as a measure of the severity of the dry monsoon period the number of rainy days during the four driest consecutive months of the year. This method appears to be useful for understanding floristic patterns. See van Steenis (1958): 27-28.

<sup>76</sup> That is, leached and highly weathered material is continually moving downhill and fresh materials are brought closer to the root zone.



*Photo: Rob Wright*

Fig. 6. Semi-permanent cultivation of bananas and taro on river flats that are regularly rejuvenated by flooding. The hills in the background are used for shifting cultivation. Wainimbuka River, Viti Levu, Fiji.

alluvial soils that are periodically renewed by the deposition of river silt; and soils derived from highly basic rocks (especially basalt) which have sufficient slope for good drainage.<sup>77</sup> These classes of soils occupy, however, only a small part of the total area of the humid tropics, the great majority being classed as mature zonal soils. On these more level areas of "stable" soils the mechanisms for maintaining soil fertility depend entirely on the maintenance of an efficient organic cycle, for most nutrients are locked up within the plant tissue.

When the shifting cultivator uses stable soils a dynamic process of environmental change results. On clearing the forest he disrupts an ecosystem "in which climate, soil, vegetation and fauna are components in an extremely stable equilibrium".<sup>78</sup> Cultivation in effect takes the form of "catch crops" that take advantage of the transient availability of

<sup>77</sup> Kellog (1950): 271.

<sup>78</sup> Richards (1952): 401.

nitrogen and carbon, the main nutrients of the organic matter lying on the forest floor. Exposure to the elements leads to a rapid disintegration of humus through accelerated weathering (oxidation) and leaching, which is naturally rapid due to the porosity of most tropical soils. Thus the great majority of the nutrients that are suddenly liberated by the burn and by increased mineralisation following accelerated bacterial action are washed down to lower layers well below the root zone of most annual crops.<sup>79</sup> Soil analyses at varying depths throughout the profile fully demonstrate this leaching process,<sup>80</sup> which seems to be largely responsible for the considerable loss of nutrients in the second year of cropping.<sup>81</sup> The leaching away of lime makes the soil more acidic as indicated in lower pH values. Furthermore it appears that the clay fraction in characteristic tropical soils has a low absorption capacity for exchangeable bases, and many of these clays have a tendency to immobilise phosphates.<sup>82</sup> Exposure to the sun's rays leads to increased evaporation, and with the greater impact of heavy tropical downpours, leads to changes in structure. The steady loss of humus also affects the water holding capacity of the soil as well as structure. As a result of all these changes in composition and structure, the soil is likely to produce only one good crop.

The close dependence of shifting cultivation on soil fertility is clearly evident in analyses of changes in the soil following burning. The advantages of the burn, expressed empirically in the traditional practices of various systems, can be demonstrated. Burning leads to an accumulation of potash (probably the most prized by-product of burning) and valuable phosphates are often released just at the right time<sup>83</sup>—immediately prior to planting the crops that will need them. Burning produces, moreover, a marked decrease in potential acidity,<sup>84</sup> which is especially important in the more senile lateritic soils; it also performs a function similar to that of frost in the temperate countries in preparing a friable surface that is often ideal for the germination of seeds. In view of these facts, it can be seen that burning is not only part of the shifting cultivator's technology—a device for clearing away vegetation—but also leads to an improvement in certain properties of the soil which in some areas makes cultivation possible and generally leads to increased yields during the period of cultivation.<sup>85</sup>

On the other hand, burning has been shown to be on the whole a

<sup>79</sup> Pelzer (1958): 125.

<sup>80</sup> Cassidy and Pahalad (1953).

<sup>81</sup> Frith (1955): 184.

<sup>82</sup> F.A.O. (1957): 10.

<sup>83</sup> Dundas (1944): 124; Joachim and Kandiah (1948): 3–11.

<sup>84</sup> Kivekas (1939): 44.

<sup>85</sup> Joachim and Kandiah have demonstrated in Ceylon that crop production is greater in burnt areas than in unburnt areas. Double burning, however, gives lower yields than a single burning. (1948): 11.



*Photo: R. F. Watters*

Fig. 7. A cassava garden at the last stage of cultivation before reversion to fallow. Overcultivation has led to grass becoming dominant in the valley, instead of the climax of high forest that can be seen in the background. Koro Island, Fiji.

disadvantageous practice in view of the destruction of humus<sup>86</sup> and consequent decreased nitrification. Valuable micro-fauna and flora are destroyed and valuable organic matter is oxidised.<sup>87</sup> The most detrimental effects, however, accrue from colloidal transformation, and where burning is common (or dry conditions commonly prevail) significant changes in composition and structure favour fallow growth of slower growing species that are more xerophytic and pyrophylous, tolerant of high light conditions, and able to withstand extremes of drought and

<sup>86</sup> An experiment in dense forest at Yangambi, Belgian Congo, showed that 20–25 tons of organic matter is deposited per acre per year, Gourou (1953): 16–17

<sup>87</sup> Masefield (1948): 135–138.



moisture. If burning is excessive the end result will ultimately be the replacement of high forest by a degenerate savannah flora.<sup>88</sup>

The full effects of burning lie, however, outside the scope of this paper. The cultivator is interested particularly in its immediate effects upon soil fertility in his garden during his tenure of the site. Having exploited the fertility inherent in the forest-covered soil, and that accruing from the burn, the cultivator abandons the garden in order that the build up of fertility may begin anew. This is a slow process, depending not only on the inherent qualities of the soil-vegetation type and on the climatic regime, but also on the density of population and the preceding history of land utilisation. The slowness of the process may be illustrated by estimates of the length of the fallow period that is needed to ensure full recuperation. These vary from about twelve years for one year of cropping in Indonesia to thirty years after one crop in the sandy soil of Benin Province of Southern Nigeria.<sup>89</sup>

While soil fertility in the tropics depends on such factors as water supply and aeration as well as on nutrient status, the importance of the latter stresses the need for further research into the processes of soil development and, in particular, into rates of leaching. Thus it may be suggested that the climatic approach suggested above be supplemented by classification and large-scale mapping of soils according to the properties that indicate the degree of leaching. These are the pH value and the exchangeable base status. In the soil survey of Western Samoa, these criteria have been supplemented by examination of properties indicating the stage of development, expressed here by depth of profile, subsoil colour and silica content of topsoil.<sup>90</sup> Such basic work is an essential preliminary for planning regional development, including the determination of the areas best suited to shifting cultivation and those in which environmental conditions suggest that a transition to permanent cultivation might be economically achieved.

### *Vegetation*

Scientific study of vegetation types is of less value in understanding the adaptation of the shifting cultivator. Climax vegetation is not always in harmony with the contemporary environment as there is a time lag in its response to changed environmental factors. However, the vegetation type generally reflects the intrinsic soil fertility and in many parts of Central and East Africa, differences in the character of vegetation composition and structure on various steps of the catena are matched by

<sup>88</sup> Outstanding works in the copious literature on burning are Bartlett (1956); Aubréville (1948); Tansley and Chipp (1926). See also the bibliography by Bartlett (1955 and 1957). An excellent short account is that of Wright and Twyford (1957).

<sup>89</sup> van Beukering (1947): 249; Gourou (1953): 43n., citing *Farm and Forest*, Ibadan, December, 1941, p. 119.

<sup>90</sup> Wright (in press).

differences in the length of cultivation and of fallowing and by variations in crop associations (Fig. 8). Thus semi-permanent cropping and a wide range of crops are found on the low alluvial steps on which tall gallery forest grows, in contrast to short cropping periods and the cultivation of particular crops (such as cassava which is tolerant of a low nutrient supply) on the higher sandy steps near the "break away" of the laterite shield, where a more open grass-woodland is found. De Schlippe has noted the definite correlation between yields and the fertility of a soil as estimated by the luxuriance of its natural vegetation, but points out that chemical analysis often fails to interpret this fertility.<sup>91</sup> Indeed, INEAC considers secondary forest better suited for cultivation than primary forest.<sup>92</sup> Some peoples, such as the Kai of the Saddle Mountains, Australian New Guinea,<sup>93</sup> and the Hanunóo of the Philippines, prefer secondary forest to primary.<sup>94</sup>

### *Topography*

In certain areas of the humid tropics, and notably in Southeast Asia, shifting cultivation is found especially in upland regions,<sup>95</sup> where dry rice or tubers are the staple. However, on some of the higher and cooler plateaux in parts of the tropics we find sedentary populations practising continuous cultivation—a result probably of lower rates of laterisation. In part, shifting cultivation in the uplands of intermediate elevation seems to be a response to poorer environmental conditions consequent on greater leaching rates from higher rainfall.

In some parts of Southeast Asia, early populations settled in the lowlands were forced into the uplands by later, more powerful immigrants.<sup>96</sup> On occupying the uplands these rice-eating peoples encountered insuperable difficulties, in terms of their existing technology, in attempting to establish wet rice terraces.<sup>97</sup> The result appears to have been the adoption of shifting cultivation, which, except in the highest and coolest areas, is suited to the conditions. However, in the case of the Philippines, Spencer has noted that terracing has never been part of the cultural equipment of shifting cultivators, "except as a modern afterthought". There shifting cultivation should be regarded as "an agriculture of sloping surfaces".<sup>98</sup> It must be stressed, however, that most tuber-based forms of shifting cultivation in the Southeast Asian uplands are of very ancient origin and probably pre-date forms of wet

<sup>91</sup> de Schlippe (1956): 258–259.

<sup>92</sup> de Schlippe (1956): 252 and references.

<sup>93</sup> Thurnwald (1932): 63–64.

<sup>94</sup> Conklin (1957).

<sup>95</sup> The best study of an upland society of shifting cultivators is that of Izikowitz (1951).

<sup>96</sup> e.g., Chaturvedi and Uppal (1953): 2.

<sup>97</sup> Scott (1958).

<sup>98</sup> Spencer (1949): 32

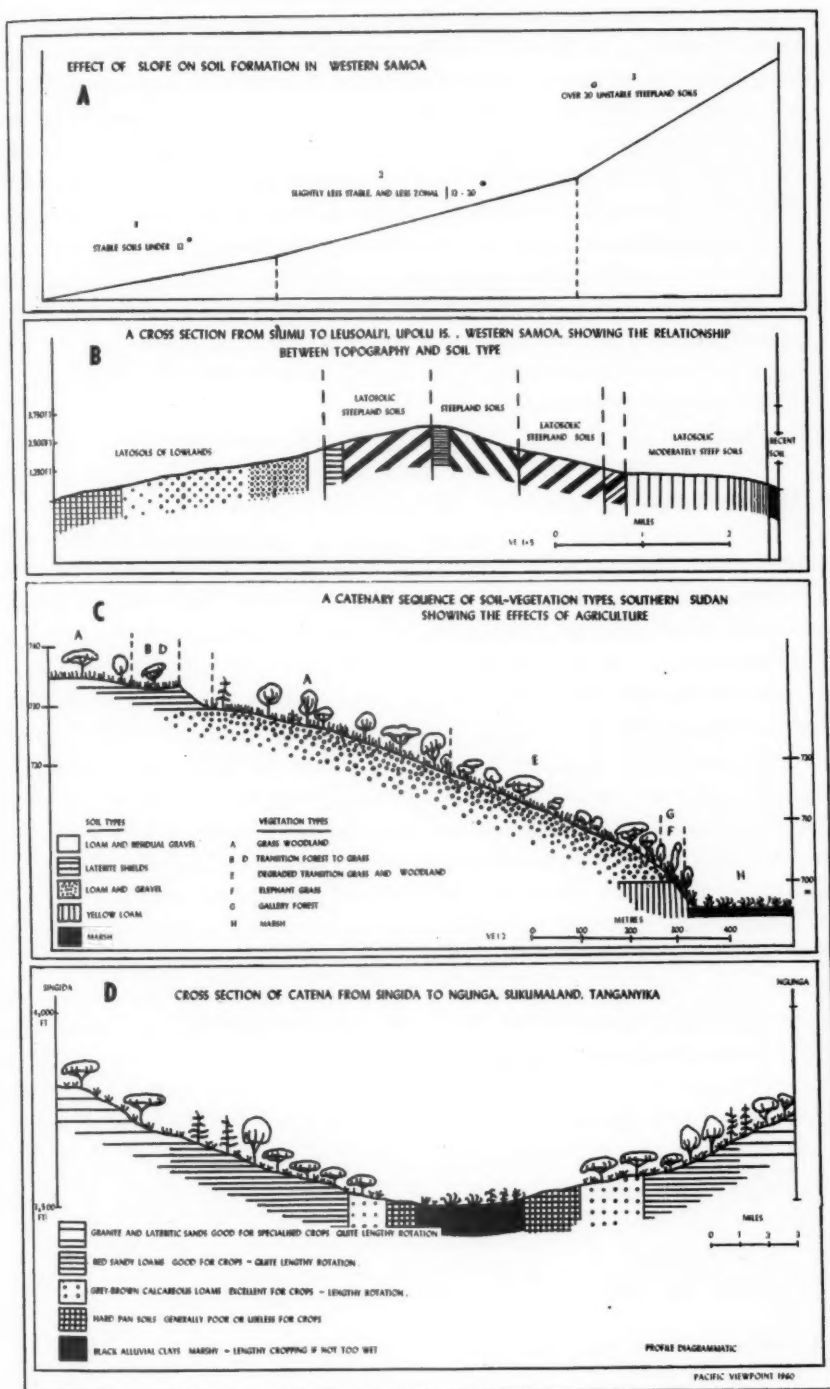


Fig. 8. Illustrations of the relationship between topography, soil development and shifting cultivation in the humid tropics.

rice cultivation of the lowlands. Moreover it appears that shifting cultivation of dry rice in the uplands may have had a different origin from the naturally or artificially flooded forms of rice culture in the lowlands.<sup>99</sup>

An understanding of the perennial rejuvenation of steepland soils by creep and wash (the "inorganic cycle") explains the location of many gardens perched on steep hillsides throughout the humid tropics. Thus rice can be grown in Sarawak on slopes in excess of 30°, <sup>100</sup> while in Samoa even steeper slopes are occasionally utilised for root crops. In surveying the soils of Western Samoa, Wright decided to distinguish three classes of soil types depending on slope. Thus soils on land not steeper than 12° were classed as "stable", those on land from 12° to 20° as "slightly less stable", while over 20°, soils were of a "steepland" type and were "unstable" (Fig. 8).<sup>101</sup>

A classification of soils according to topography that has a wider significance is that based on the "catena concept". Realising that soils and topography are often not haphazardly related in East Africa, G. Milne developed the concept of the catena as an organising framework within which variations became more meaningful. In the characteristic topography of many parts of East Africa, receding erosion has exposed strata of rock in a series of staircase-like steps proceeding downhill from the "breakaway" of the laterite shield to the river edge in the valley bottom. While all soil types within this "catena" have genetic and morphological differences, they are nonetheless "linked in their occurrence by conditions of topography and are repeated in the same relationship to each other wherever the same conditions are met with".<sup>102</sup> The catenary relationship of soils is not only useful in increasing our understanding of tropical soil types and in facilitating their mapping, but also adds to our understanding of differences in cultivation patterns, as we have illustrated above. Thus while shifting cultivation is not uncommon on stable lowlands in the humid tropics, it is in some ways more characteristic of upland regions with their higher leaching rates and steepland soils. The degree to which its occurrence can be regarded as a reflection of the cultural level will now be examined.

#### THE INFLUENCE OF CULTURE

In contrast to his earlier interpretation in *The Tropical World*, which was largely environmentalist in nature, Pierre Gourou presented in 1955 a rather different view:

"As with all agricultural techniques, ladang is the expression of a civilizational level and not the result of any inescapable physical constraint."<sup>103</sup>

<sup>99</sup> Bartlett (1958): 45-46.

<sup>100</sup> Leach (1950): 89.

<sup>101</sup> Wright (in press).

<sup>102</sup> Milne (1935): 197.

<sup>103</sup> Gourou (1956): 339.

Most exponents of this view base their position on the fact that no advanced autochthonous civilisation has evolved in the tropics with the possible exception of the Mayan civilisation of Central America, and one or two civilisations in tropical Africa. Although it might be argued that the exception disproves the rule, a certain amount of evidence suggests that the culture hearth of the Mayan civilisation may not have been in the Petén plain of the lowlands, but in the mountains of Guatemala, where tropical conditions were considerably modified.<sup>104</sup> However, it is clear that shifting cultivation formed the economic basis of the Mayan civilisation sited on the lowlands of Guatemala and Yucatan. It is significant, though, that the soils of the central Petén area are *rendzinas*—one of the better soils of the humid tropics.<sup>105</sup> While the reasons for the downfall of the Mayan civilisation are still obscure, Gourou's thesis that it was caused by soil exhaustion resulting from over-population is convincingly argued.<sup>106</sup> If this conclusion is true, it is clear that shifting cultivation in tropical America at least is an inadequate economic base on which to attain and perpetuate a high civilisation. It is significant that the advanced civilisations of Southeast Asia represent the elaboration of culture traits imported from elsewhere, and were in fact "hydraulic civilisations" based on the sure economic foundation of flooded ricefields. The Zimbabwe civilisation of Southern Rhodesia, and possibly that of Benin in Nigeria, are nonetheless isolated examples in an unrewarding environment and are quite remarkable under these environmental circumstances.

The cultures of shifting cultivators in the humid tropics are then characteristically undeveloped and represent a relatively low cultural level. Whatever theory of cultural evolution may be held, the mechanisms of change appear to be reasonably clear: environmental change producing disaster and invention, diffusion in the form of the introduction of new crops, tools, techniques and ideas, and diffusion that leads to imitation. In the humid tropics, little is known about environmental change in the last few thousand years, but it seems clear that the striking differences in culture that do exist result very largely from diffusion and consequent cultural elaboration. According to Terra it is essentially "the cultural inheritance" of migrating peoples that explains the existence in Indonesia today of various agricultural systems in areas that are often quite unsuited ecologically to them.<sup>107</sup> Few would disagree with this contention with regard to the distribution of pastoralism, mixed agriculture, and wet rice cultivation, but with regard to the distribution of societies of integral shifting cultivators, the force of

<sup>104</sup> Gourou (1953): 45n.; Steward (1955): 191, based on sources cited in 187n.-188n.

<sup>105</sup> Ferdon (1959): 13.

<sup>106</sup> Gourou (1953): 43-51.

<sup>107</sup> Terra (1953).



environmental circumstances seems to be a more adequate explanation.

In the early occupation of the Philippines, however, it appears that shifting cultivation was so much part and parcel of the immigrant's social heritage that it influenced the pattern of settlement:

"The Neolithic farmers who first came to the islands were not all of the same mould, so that some of the inland and more hilly landscapes had an appeal for some groups, while others were most attracted by the swampy, flattish littoral."<sup>108</sup>

This is an interesting parallel to the settlement of Britain since Neolithic times where there has been a strong correlation between the environmental conditions sought out and the level of technology of the invaders. However, the infrequent occurrence of shifting cultivation on the well-watered lowlands throughout Southeast Asia as a whole<sup>109</sup> suggests that the demonstrably superior productivity of other agricultural systems has ousted shifting cultivation in these regions, even if it were part of a population's cultural heritage.

Cultural evaluations of environmental potentialities seem to be closely bound up with the level of technology. It is in fact in its technological dimension that any cultural interpretation of shifting cultivation must largely be based. In general, technology reflects a close adjustment to the environment. Thus in many parts of Africa a hoe that is used to scrape only the top two inches of soil is designed with the blade at such an acute angle to the haft that it can be used only for this special purpose. The digging stick that is so common in Southeast Asia and Oceania is admirable for levering up roots in the jungle clearing. With the evolution of tools suited to the qualities of tropical soils, it is no wonder that little further invention occurred. Thus in South America the nearest equivalent to a plough was the foot-plough of the Incas—who dwelt in atypical conditions in the highlands. Elsewhere evolution of the plough occurred only exceptionally, and modern experience suggests that it is generally unsuited to agriculture in the humid tropics.

While many items in the material equipment of the shifting cultivator express the close adjustment achieved, many tools can only be described as inferior in comparison with those of extra-tropical cultures. Thus the stone axe is a very inefficient clearing tool in comparison with the steel axe, and the digging stick that is so effective in the forested clearing is most inadequate in uprooting the deep rhizomes of grasses like *Imperata* spp. in environments where grasses have become firmly established. The extreme difficulty of tilling the soil and mastering the weeds in a permanent form of cultivation when only inefficient tools were available<sup>110</sup> may be a sufficient explanation of shifting cultivation in some favoured areas, but the persistence of the system in modern times when improved tools have been introduced shows the inadequacy of

<sup>108</sup> Spencer (1949): 29.

<sup>109</sup> Taylor (1953) has a map of agricultural systems in Southeast Asia.

<sup>110</sup> See Ormeling (1957).

this view. Indeed, it can be said that the West, with all its technological resources, has not yet solved the problem of how to utilise permanently many of the large areas of stable soils that comprise the lowlands of the humid tropics.

The influence of culture as a whole can best be appreciated when it is realised that patterns of culture amongst shifting cultivators are on the whole strongly coloured by environmental influences. In addition to technology, many elements in other levels of culture bear evidence of the relationship. Thus the permanent attachments of a Bemba to tutelary deities associated with the soil are rivalled only by those concerned with human relationships within his lineage group.<sup>111</sup> Amongst the Iban of Sarawak, "every stage in the actual cultivation of padi is accompanied by rites, which in Iban eyes, are vital to the success of the crop". The series of rites is described as a "continuum" and as a "formidable labyrinth of diverse elements".<sup>112</sup> It is indeed common for the richest historical associations and greatest elaborations in any sector of culture to surround the principal crops cultivated. In this labyrinth of ritual the influence of the environment is evident though often muted. Social organisation too is often attuned to the contingencies of shifting cultivation. An atomistic form is frequently characteristic of cyclic migrators. The social organisation of the migratory Iban is "tele-scopic", allowing temporary sub-division of the long-house community into a series of subsidiary groups and the association and reassociation of extended families.<sup>113</sup>

A good deal of the culture content of any people cannot of course be explained by reference to the environment, but only by a process of interaction of a multitude of elements within different dimensions of the culture itself, or by the introduction of new elements into the body of the culture from outside. In some instances the dominance of some of these supra-organic features of culture directly influence aspects of shifting cultivation. The fields of the Dogon of the French Sudan, for example, are of a twisted quadrilateral shape in accordance with their cosmological view that the world developed in the form of a spiral. Two sides of each field form a very wide angle opening up towards the land that will subsequently be cleared. This angle is said to symbolise the continuous extension of the world.<sup>114</sup> Such examples of the force of

<sup>111</sup> Richards (1939): 237.

<sup>112</sup> Freeman (1955): 32.

<sup>113</sup> Freeman (1955): 39.

<sup>114</sup> "In theory the central point of development is formed by three ritual fields, assigned to three of the mythical ancestors and to the three fundamental cults. When laid out they mark out a world in miniature on which the gradual establishment of man takes place. Starting from these three fields, the fields belonging to the various kin groups, and finally various individual fields, are sited along the axis of a spiral starting from this central area." Griaule and Dieterlen (1954): 94.

cultural influences, however, seem to affect superficial rather than basic features of the form of cultivation.

The role of culture is perhaps most effectively seen in the range of choice that is available to the individual cultivator. Within the basic limits of agricultural practice defined by environmental factors, cultural preference defines further limits. However, it appears that in these "hard environments" of the humid tropics, culture maximises the individual's chances of success by guiding his choice. The Bemba cultivator of Northern Rhodesia seemed to Audrey Richards to have a bewildering number of choices of action, there being "as many grades between the fool and the wise man as in any community of our own".<sup>115</sup> De Schlippe, on the other hand, has shown convincingly that experience canalises the range of action (amongst the Azande, at least) into several well-tried patterns. Concrete expression of this process is seen in the limited range of field types, which represent collective "simplification and codification" over the ages.

While our understanding of the nature of culture is still limited, and there is a general dearth of information on the cultures of shifting cultivators, it still seems that many elements of the dimensions of many cultures are adaptive in the sense that they reflect the society's response to its physical environment. Thus much of culture must be conceived as linked with environment as part of a total ecosystem, and while traditional agriculture appears as the most important part of culture in its "function of ensuring the survival of the group in its habitat", its basic features exemplify relationships dominated by environmental qualities.

#### POPULATION DENSITY

The last significant set of factors which influence shifting cultivation are those concerned with population density. Indeed the density of population is generally the direct determining factor in the process of rotation, for a rising population in any area demands an extension of the period of cultivation or a shorter resting period of the *belukar* area. Both result in a steady deterioration in soil fertility. Increasing population pressure is the most serious of all problems facing the shifting cultivator today, for the land—an expendable resource—is usually his sole means of livelihood. However, since this question involves mainly the effects of this agricultural system, a full consideration lies outside the scope of this article.

The most thorough study of the "carrying capacity" of a large area utilised by shifting cultivators is that of van Beukering, who found that in Indonesia shifting cultivation could maintain a population of 130 people per square mile "for a long time".<sup>116</sup> This figure has often been

<sup>115</sup> Richards (1939): 229.

<sup>116</sup> van Beukering (1947): 249.



Photo: R. F. Watters

Fig. 9. The transition to permanent cultivation in a fertile environment as a result of growing cash-consciousness and effective extension work. Cocoa trees (left) interplanted with bananas and subsistence crops of "giant taro" (*ta'amu*) and taro, Upolu, Samoa.

made the basis for generalised pronouncements on the upper limits of population, irrespective of the level of soil fertility, type of farming system, percentage of land that is cultivable, level of technology, cultivation practices and size of the labour force. Moreover, such pronouncements ignore the fact that the estimate assumes that one hundred per cent of the land area is cultivable. In contrast to this high figure, the infertile Serenje Plateau of Northern Rhodesia is estimated to have a maximum carrying capacity in perpetuity of only six persons per square

mile.<sup>117</sup> The range in productivity per acre varies greatly throughout the humid tropics; it has, for example, been noted that a much lower mean density of population can apparently be supported in Sarawak than in Burma, as the swiddens have to be very much larger to support a garden family of the same size.<sup>118</sup> It is clear, nevertheless, that the efficient operation of a form of shifting cultivation depends on the maintenance of a low density of population. This is, however, more of a consequence than a cause of the system. A low and stable population expresses the balance that has been achieved between man and environment. In the pre-European era population growth was limited by either disease, harvest failures and tribal wars or by mechanisms evolved by the society and expressed in its institutional structure.

Changing environmental conditions inevitably react on the economic conditions of the inhabitants. Thus an incipient decline in soil fertility is expressed in the increasing distance from home to swidden. Ironically enough, one of the most disabling features distinguishing the system—its shortage of labour—is usually overcome only when the system is breaking down due to the steadily rising pressure of population. An efficient and stable form of shifting cultivation is characteristically a labour-extensive type of agriculture.

#### ECONOMIC FACTORS

Some authorities have seen certain economic factors as basic in explaining the nature of shifting cultivation. Integral shifting cultivators have a closed economy in which production is based almost entirely on human energy. Yields per acre appear to vary widely compared to other agricultural systems, but it is clear that yields per man-day are high in Southeast Asia. Gourou regards this fact as significant in explaining why the Moi Rhade of the Annamite Cordillera of Indochina abandoned the plough and wet rice culture to return to their traditional shifting cultivation once administrative pressure was relaxed. Not only was shifting cultivation an integral part of their cherished culture, but it gave a higher return per man-day compared with unfertilised permanent rice fields.<sup>119</sup> The universal aim of obtaining a reasonably large harvest with as little effort as possible underlies this extensive system, and appears to explain in the main, the adoption of shifting cultivation for the first time by some groups of new colonists settling thinly inhabited areas. It appears, however, that yields per man-day are low in many parts of Africa.

In most forms of shifting cultivation, the labour requirement is distinctly low and discontinuous in comparison with other agricultural

<sup>117</sup> Peters (1950).

<sup>118</sup> Leach (1950): 88–89.

<sup>119</sup> Gourou (1956): 345.



systems. Although Freeman stresses the uncertainty of his figures, his maximum totals for the Iban of Sarawak come to only seventy-one man-days per acre<sup>120</sup> for cultivation in virgin jungle, or sixty-six in secondary jungle, with a further thirty days or so spent in fence building, watching and other tasks for the whole farm.<sup>121</sup> The equivalent figure of 1,220 man-hours per acre for the Hanunóo of the Philippines is rather higher.<sup>122</sup> In the Southern Sudan, the monthly maximum of agricultural work by the Azande is only fifty-four per cent of total possible effort and the monthly minimum falls as low as five per cent.<sup>123</sup>

In spite of this low labour requirement, a severe limit is imposed on the scale of agricultural activity by the small number of labourers available in each garden family. The critical limiting factor to the amount of land cultivated may well be the area that can be effectively weeded by the labour force available, as it is with the Iban.<sup>124</sup> One study at least suggests that a shortage of labour is a reason for the cultivator letting his oldest swidden relapse into forest each year.<sup>125</sup> Nevertheless, this can hardly be considered the primary cause of abandonment.

The absence of marked specialisation of labour in many societies also appears to be connected with the extensive nature of shifting cultivation. This means that every individual has to be trained in the use of almost all tools and methods, leading to excessive duplication of function. Since the knowledge of the average individual comes far closer to the total collective knowledge than in more advanced societies, there is a marked generalisation of economic effort. Custom decrees that activity be directed into certain stereotyped channels, thus stifling initiative and leaving little scope for any incipient trends toward specialisation. It is clear that in overcoming the problems associated with shifting cultivation there will have to be considerable cultural advance in the field of social organisation to permit specialisation of labour.

The breadth of the economic base of any society of shifting cultivators depends to some extent on their ability to store or preserve foods. Where these skills are possessed to a high degree, there often seems to be an intensification of agricultural activity during the growing season of the major crops, allowing considerable scope for leisure in the rest of the year. This may obviate any seasonal nutritional strain as well as any consequent limitation to the amount of work achieved.

A major economic handicap is the extreme difficulty of accumulating and conserving wealth in a shifting field system. In contrast to the fixed

<sup>120</sup> A "man-day" is defined rather loosely as "a normal day's work for either a male or female". Freeman (1955): 89.

<sup>121</sup> Freeman (1955): 90.

<sup>122</sup> Conklin (1957): 152.

<sup>123</sup> de Schlippe (1956): 168, 154.

<sup>124</sup> Freeman (1955): 56.

<sup>125</sup> Richards (1939): 314.

wealth or improved value characteristic of European holdings, shifting cultivators repeatedly have to start again with nothing with the commencement of every new cycle. It is not surprising, therefore, that wealth never exceeds a certain level, consisting only of perishable goods.<sup>126</sup> The diffusion of wealth by various social obligations of a customary nature is, however, the main reason for the absence of accumulated wealth in most of these societies. Such chronic poverty seems to underlie that characteristic quality of inertia which has often been noticed among shifting cultivators.

On the whole, such economic conditions seem to be secondary rather than primary factors in the perpetuation of this economic system. Essentially they are consequences of the primary physical factors, and while they are effective in the total interrelated complex and partly distinguish the system as a whole, changes in the economic organisation of some societies following Western contact seem to be insufficient in themselves to lead to any form of continuous cultivation in which soil fertility is permanently maintained.

#### CONCLUSION

This paper has undertaken a broad survey of shifting cultivation in an attempt to ascertain the basic conditions in which it exists. Arguments for and against are frequently waged; not all, however, recognise the many facets of the system.

The wide variety of agricultural activities that is comprehended in the term "shifting cultivation" has been indicated in a classification of eight major types. This differentiation on an economic basis was followed by a further subdivision on the basis of twelve criteria that are significant for a thorough understanding of the man-land relationship and which define the conditions on which each form can be judged. A further division was made according to whether the societies are migratory or not and long cycle migrants were distinguished from those with a short cycle.

In attempting to elucidate the many factors that influence shifting cultivation, a working hypothesis was formulated which emphasised the importance of many individual elements in the environment and in the culture of the shifting cultivator. A structural consideration of the influence of such elements as soil type, climatic conditions, and cultural preferences sheds some light on the system. Such a structural approach leads naturally to a functional conception, for the nature of relationships between elements is often more important than the nature of the elements themselves. Introduction of the time dimension provided a dynamic view of the operation of these relationships throughout several phases in the cycle of cultivation. A consideration of such concrete features as field types illustrated the arrangement of elements in their

<sup>126</sup> de Schlippe (1956): 198.

structural order, and threw some light on the relationships that existed and the processes that produced them. A further method of examining the system was then employed in a more technical analysis of the conditions of climate, soil, vegetation and relief that are commonly found in regions of shifting cultivation, and the influence of each was assessed. In particular it was stressed that the length of the dry season was closely linked with the rate of leaching, which was one of the most important environmental processes affecting the length of cultivation and the length of fallowing. The natural processes that resulted in a steady decline in soil fertility were seen to be accelerated by the various phases of cultivation. The differences in fertility-maintaining mechanisms were stressed in comparing stable and unstable soils, and the transient nature of soil fertility was noted (especially on stable soils) when the balance of nature was disturbed. Shifting cultivation was found to be closely articulated to these conditions. The role of culture was seen to be in many ways complementary to that of the environment, since much of its character is strongly coloured by connections with nature. Population density was found to be effective in defining an upper ceiling above which an efficient system could not be perpetuated and economic factors were seen to be of relatively slight significance. The universality of shifting cultivation throughout the tropics suggests that convergent evolution has occurred, resulting largely from a common set of environmental conditions.

Thus the shifting cultivator appears as "a man struggling in a hard environment", far from omnipotent over nature nor yet impotent in the face of its influences. Through the medium of his technology and with the aid in particular of fire, he is indeed the ecological dominant. But in a stable, integral form of cultivation, man was still part of the total ecosystem, in harmony with environmental conditions. Thus it may be said that the shifting cultivator was aware of the design in nature and he strove always to adapt himself and his culture to it. He could, however, improve the design in certain respects (e.g., the beneficial effects of burning), but experience taught him, through the medium of his culture, the boundaries to human action. Consequently shifting cultivators had reached a stage of "ecological climax" beyond which little cultural evolution could occur until the whole ecosystem was disturbed. This disturbance has occurred in general with the impact of the West. Rising populations and the introduction of a new set of values that came from the temperate West have set in train a process that has led to rapid changes in the environment, and destroyed the old balance between man and nature. It would not be possible—nor indeed would it be desirable—to try to recreate the old relationship; the task of this generation is to establish a new relationship that does not violate the "design of nature" and yet is consistent with the needs of a twentieth century world.

## REFERENCES

- Allan, W., 1949, "Studies in African Land Usage in Northern Rhodesia", *Rhodes-Livingstone Papers*, No. 15, London.
- Allsop, J., 1953, "Shifting Cultivation in Burma: Its Practice, Effects and Control and its Use to make Forest Plantations", *Proceedings of the Seventh Pacific Science Congress, 1949*, Christchurch, pp. 277-285.
- Aubréville, A., 1949. *Climats, forêts et désertification de l'Afrique tropicale*, Paris.
- Bartlett, H. H., 1955 and 1957, *Fire in Relation to Primitive Agriculture and Grazing in the Tropics. Annotated Bibliography*. Vol. I (1955), Vol. II (1957), Ann Arbor, Michigan. Three more volumes are to be published.
- , 1956, "Fire, Primitive Agriculture and Grazing in the Tropics", *Man's Role in Changing the Face of the Earth*, edited by Thomas, William L., Jr., and others, Chicago, pp. 692-720.
- , 1957, "Possible Separate Origin and Evolution of the Ladang and Sawah Types of Tropical Agriculture", *Ninth Pacific Science Congress, Abstract of Papers*, Bangkok, pp. 45-46.
- Beukering, J. A. van, 1947, "Het Ladangvraagstuk", *Landbouw*, Batavia, XIX, 6, pp. 241-285.
- Bews, J. W., 1935, *Human Ecology*, London.
- Blumenstock, David I., 1958, "Distribution and Characteristics of Tropical Climates", *Proceedings of the Ninth Pacific Science Congress, 1957*, Vol. 20, Bangkok, pp. 3-23.
- Bohannan, Paul, 1954, *Tiv Farm and Settlement*, H.M.S.O., London.
- Bower, Ursula G. B., 1952, *Naga Path*, London.
- Brown, G., 1910, *Melanesians and Polynesians*, London.
- Brown, Paula and Brookfield, H. C., 1959, "Chimbu Land and Society", *Oceania*, XXX, 1, Sept. 1959, Sydney.
- Buchanan, K. M., and Pugh, J. C., 1955, *Land and People in Nigeria*, London.
- Caniero, Robert, 1956, "Slash and Burn Agriculture: A Closer Look at its Implications for Settlement Pattern", *Fifth International Congress of Anthropological and Ethnological Sciences*, Philadelphia.
- Cassidy, N. G. and Pahalad, S. D., 1953, "The Maintenance of Soil Fertility in Fiji", *Fijian Agricultural Journal*, 24, Dec. 1953, Suva, pp. 82-86.
- Carter, G. F. and Pendleton, R. L., 1956, "The Humid Soil: Process and Time", *Geographical Review*, XLVI, New York, pp. 488-507.
- Castro, Suárez de, 1953, "Some Effects of Burning on Soil and Yields", *Boletín Información, Chinchina*, Caldas, Columbia, IV, 41, May 1953, pp. 9-32.
- Chaturvedi, M. D. and Uppal, R. N., 1953, "A Study in Shifting Cultivation in Assam", *Indian Council of Agricultural Research, Research Series*, New Delhi.
- Colony of North Borneo, 1951, *Report of the Committee on Shifting Cultivation*, 12th November, 1951, Sandakan.
- Conklin, Harold C., 1954, "An Ethnoecological Approach to Shifting Agriculture", *Transactions N.Y. Academy of Sciences*, Series II, 17, 22nd Dec. 1954, New York, pp. 133-142.
- , 1957, "Hanunóo Agriculture. A Report on an Integral System of Shifting Cultivation in the Philippines", *F.A.O. Forestry Development Paper*, 12, Rome.
- Darby, H. C., "The Clearing of the Woodland in Europe", *Man's Role in Changing the Face of the Earth*, edited by Thomas, William L., Jr., and others, Chicago, pp. 183-216.
- Demangeon, A., 1947, *Problèmes de Géographie Humaine*, Paris.
- Department of Agriculture, Malaya, 1939, "Padi Planting Methods in Malaya", *Malayan Agricultural Journal*, XXVII, 2, Kuala Lumpur, February 1939.
- Dundas, J., 1944, "Bush Burning in Tropical Africa", *Empire Forestry Journal*, 23, London, pp. 122-125.

- Eckwall, E., 1955, "Slash-and-Burn Cultivation: A Contribution to Anthropological Terminology", *Man*, LV, 143, London, Sept. 1955, pp. 135-136.
- Elwin, V., 1947, *The Muria and their Ghotul*, Bombay.
- Farmer, B. H., 1957, *Pioneer Peasant Colonization in Ceylon*, London.
- Faulkner, O. T. and Mackie, J. R., 1933, *West African Agriculture*, Cambridge.
- Ferdon, Edwin N., 1959, "Agricultural Potential and the Development of Culture", *Southwestern Journal of Anthropology*, 15, 1, Spring, 1959, Albuquerque, pp. 1-19.
- F.A.O. Staff, 1957, "Shifting Cultivation", *Unasylva*, II, 1, Washington.
- Food and Agricultural Organization of the United States, 1948, "Lands of Shifting Cultivation", *Soil Conservation*, Washington.
- Forde, C. Daryll, 1934, *Habitat, Economy and Society*, London.
- Freeman, J. D., 1955, "Iban Agriculture. A Report on the Shifting Cultivation of Hill Rice by the Iban of Sarawak", *Colonial Research Studies*, No. 18, London.
- Frith, A. C., 1955, "No Man's Land", *Empire Forestry Review*, 34, 2, June 1955, London, pp. 179-187.
- Geddes, W. R., 1954, *The Land Dayaks of Sarawak*, H.M.S.O., London.
- Gheebant, A., 1953, *Impossible Adventure*, London.
- Goma Conference, 1949, "Comptes Rendus de la Conférence Africaine des Sols, 8-16 Nov., 1948", *Bulletin Agricole du Congo Belge*, 4 vols., 40, 1-4, Brussels.
- Gourou, Pierre, 1953, *The Tropical World*, Trans. Laborde, E.D., London.
- , 1956, "The Quality of Land Use of Tropical Cultivators", *Man's Role in Changing the Face of the Earth*, edited by Thomas, William L., Jr., and others, Chicago, pp. 336-349.
- , 1959, "L'Asie du Sud-Est et le Monde Tropical", *Proceedings of I.G.U. Regional Conference in Japan, 1957*, Tokyo, pp. 574-578.
- Griaule, M. and Dieterlen, G., 1954, "The Dogon of the French Sudan", *African Worlds*, London, pp. 83-110.
- Haan, J. H. de, 1950, "Progress in Shifting Cultivation in Indonesia", *Transactions Fourth International Congress of Soil Science*, 24th July-1st August, 1950, Amsterdam, pp. 314-320.
- Hodder, B. W., 1956, "The Economic Development of Sarawak", *Geographical Studies*, III, 2, London.
- Izikowitz, K. G., 1951, "Lamet: Hill Peasants in French Indochina", *Etnologiska Studier*, 17, Göteborg.
- Jewitt, T. N., 1950, "Shifting Cultivation on the Clay Plains of the Central Sudan", *Transactions of the Fourth International Congress of Soil Science*, 21st July-1st August, 1950, Amsterdam, pp. 331-333.
- Joachim, A. W. R. and Kandiah, J., 1948, "The Effect of Shifting (Chena) Cultivation and Subsequent Regeneration of Vegetation on Soil Composition and Structure", *Tropical Agriculturist*, 104, Trinidad, pp. 3-11.
- Johnston, Bruce F., 1958, *The Staple Food Economies of Western Tropical Africa*, Stanford.
- Kellog, Charles E., 1950, "Tropical Soils", *Transactions Fourth International Congress of Soil Science*, 24 July-1 August 1950, Vol. 1, Amsterdam, pp. 266 ff.
- Kivekas, J., 1939, "Influence of Shifting Cultivation with Burning upon some Properties of the Soil", *Commentationes Instituti Forestalis Fenniae XXVII*, Helsinki.
- Lafont, Pierre-Bernard, 1958, "The Slash-and-Burn (Ray) Agricultural System of the Mountain Populations of Central Vietnam", *Proceedings of the Ninth Pacific Science Congress, 1957*, Vol. 7, Bangkok, pp. 56-59.
- Leach, E. R., 1949, "Some Aspects of Dry Rice Cultivation in North Burma and



- British Borneo", *Advancement of Science*, 6, London, pp. 26-28.
- , 1950, "Social Science Research in Sarawak", *Colonial Research Studies*, No. 1, London.
- , 1957, "Some Economic Advantages of Shifting Cultivation", *Ninth Pacific Science Congress, Abstract of Papers*, Bangkok, pp. 79-80.
- Lewis, Roy, 1954, *Sierra Leone*, London.
- Malcolm, D. W., 1953, *Sukumaland. An African People and their Country*, London.
- Masefield, G. B., 1948, "Grass Burning: Some Uganda Experience", *East African Agricultural Journal*, 13, Nairobi, pp. 135-138.
- Miller, R. W. R., 1954, "The Uplands of South-East Asia", *Sarawak Museum Journal*, VI, 4 (n.s.), December, Kuching, pp. 96-103.
- Milne, G., 1935, "Some Suggested Units of Classification and Mapping particularly for East African Soils", *Soil Research*, 4, Rome, pp. 183-198.
- Mohr, E. C. J., 1933-38, *The Soils of Equatorial Regions with Special Reference to the Netherlands East Indies*, Amsterdam.
- and Baren, F. A. van, 1954, *Tropical Soils*, The Hague and Bandung.
- Morgan, W. B., 1957, "Some Comments on Shifting Cultivation in Africa", *Research Notes*, 9, June 1951, Department of Geography, Ibadan.
- , 1959, "Agriculture in Southern Nigeria (excluding the Cameroons)", *Economic Geography*, 35, 2, Worcester, pp. 138-150.
- Nye, P. H., 1957, "Some Prospects of Subsistence Agriculture in West Africa", *Journal of the West African Science Association*, 3, 1, Feb. 1957, London, pp. 91-95.
- Ooi, Jin-bee, 1959, "Rural Development in Tropical Areas, with special reference to Malaya", *Journal of Tropical Geography*, Singapore and Kuala Lumpur, 12, March, 1959.
- Ormeling, F. J., 1957, *The Timor Problem*, Groningen and Jakarta.
- Paulme, D., 1954, *Les Gens du Riz. Kissi de Haute-Guinée Française*, Paris.
- Pelzer, K. J., 1945, *Pioneer Settlement in the Asiatic Tropics*, American Geographical Society, New York.
- , 1958, "Land Utilization in the Humid Tropics: Agriculture", *Proceedings of the Ninth Pacific Congress, 1957*, Bangkok, Vol. 20, pp. 124-143.
- Pendleton, R. L., 1950, "Agricultural and Forestry Potentialities of the Tropics", *Agronomy Journal*, XLII, 3, pp. 115-123.
- Penman, H. L., 1940, "Meteorological and Soil Factors Affecting Evaporation from Fallow Soil", *Quarterly Journal, Royal Meteorological Society*, 66, 287, London, pp. 401-410.
- , 1948, "Natural Evaporation from Open Water, Bare Soil and Grass", *Proceedings Royal Society, London*, 193 (a), London, pp. 120-145.
- , 1956, "Estimating Evaporation", *Transactions American Geographical Union*, 37, Washington, pp. 43-50.
- Peters, D. U., 1950, "Land Usage in Serenje District", *Rhodes-Livingstone Papers*, No. 19, London.
- Pfeifer, G., 1956, "The Quality of Peasant Living in Central Europe", *Man's Role in Changing the Face of the Earth*, edited by Thomas, William L., Jr., and others, Chicago, pp. 240-277.
- Prescott, J. A. and Pendleton, R. L., 1952, "Laterite and Lateritic Soils", *Commonwealth Bureau of Soils Science, Technical Communication*, 47, Farnham Royal, Bucks.
- Redfield, Robert, 1955, *The Little Community, Viewpoints for the study of a Human Whole*, Chicago.
- Richards, Audrey I., 1939, *Land, Labour and Diet in Northern Rhodesia. An Economic Study of the Bemba Tribe*, London.

- Richards, P. W., 1952, *The Tropical Rain Forest. An Ecological Study*, Cambridge.
- Roth, H. Ling, 1896, *Natives of Sarawak and British North Borneo*, New York.
- Sauer, Carl O., 1952, *Agricultural Origins and Dispersals*, New York.
- , 1956, "The Agency of Man on Earth", *Man's Role in Changing the Face of the Earth*, edited by Thomas, William L., Jr., and others, Chicago, pp. 49-69.
- Schlippe, Pierre de, 1956, *Shifting Cultivation in Africa. The Zande System of Agriculture*, London.
- Scott, William H., 1958, "A Preliminary Report on Upland Rice in Northern Luzon", *Southwestern Journal of Anthropology*, 14, 1, Spring 1958, Albuquerque, pp. 87-105.
- Soma, M., 1959, "The Cultivation of Mitsumata on Shifting Fields in Shikoku", *Proceedings of I.G.U. Regional Conference in Japan, 1957*, Tokyo, pp. 470-477.
- Spencer, J. E., 1949, "Land Use in the Upland Philippines", *The Development of Upland Areas in the Far East*, Institute of Pacific Relations, Vol. 1, Pt. 2, New York, pp. 26-57.
- Steward, Julian H., 1955, *Theory of Culture Change*, Urbana, Ill.
- Tansley, A. G. and Chipp, T. F., 1926, *Aims and Methods in the Study of Vegetation*, London.
- Taylor, Gordon D., 1953, "Some Crop Distributions by Tribes in Upland Southeast Asia", *Southwestern Journal of Anthropology*, 9, 3, Autumn 1953, Albuquerque, pp. 296-308.
- Terra, G. J. A., 1953, "Some Sociological Aspects of Agriculture in Southeast Asia", *Indonesië*, VI, 4, pp. 297-316; 5, The Hague, pp. 439-463.
- Thurnwald, R., 1932, *Economics in Primitive Communities*, London.
- Tondeur, G., 1955, "Shifting Cultivation in the Belgian Congo", *Unasylva*, Washington, 9, 2, June 1955.
- Tothill, J. D., 1940, *Agriculture in Uganda*, London.
- Von Steenis, C. G. G. T., 1958, "Tropical Lowland Vegetation: The Characteristics of its Types and their Relation to Climate", *Proceedings of the Ninth Pacific Science Congress*, Vol. 20, 1957, Bangkok, pp. 25-37.
- Watters, R. F., 1958, "Cultivation in Old Samoa", *Economic Geography*, 34, 4, Oct. 1958, Worcester, pp. 338-351.
- , 1958, "Culture and Environment in Old Samoa", *Western Pacific*, Department of Geography, Victoria University of Wellington, pp. 41-70.
- (in press), "Some Forms of Shifting Cultivation in the Southwest Pacific", *Journal of Tropical Geography*, Singapore and Kuala Lumpur.
- Whittlesey, Derwent, 1937, "Shifting Cultivation", *Economic Geography*, 13, 1, Worcester, pp. 35-52.
- Wright, A. C. S. (in press), *Soil Survey of Samoa*, Soil Bureau, Wellington.
- Wright, A. C. S. and Twyford, I. T., 1957, "Soil Development, Shifting Cultivation and Permanent Agriculture in the Humid Tropics", *Fijian Agricultural Journal*, 28, 3 and 4, Dec. 1957, Suva, pp. 56-61.
- Wright, A. C. S. and Twyford, I. T. (in press), "The Soil Resources of the Fiji Islands", Government Printer, Suva.

## SOURCES FOR FIG. 8

- A—Wright (in press).
- B—Wright (in press); "Upolu", 1:100,000, Lands and Survey Dept., Apia, Western Samoa, 1957.
- C—de Schlippe (1956): 40-41.
- D—Malcolm (1953), soil map, and 174 ff.

## The Asian and Pacific Scene

### POPULATION AND EMPLOYMENT PROSPECTS IN JAPAN

With the fifth largest population in the world, a population of over ninety million, hemmed in on pocket-sized plains between mountains and sea, Japan is confronted with the major problem of finding employment for over one million new workers each year.

Tachi Minoru ("Population Problem", *Japan—Its Land, People and Culture*, Tokyo, 1958, p. 212) gives the population density at the last census year, 1955, as 246 persons per square kilometre. This population density ranks third in the world, exceeded only by Belgium and the Netherlands. Forty-five per cent of the population is engaged in agriculture but food-producing land is limited. There are only 139 acres of arable land per 1,000 of population, whereas the United Kingdom has two and a half times as much arable land per 1,000 of population, India has seven times, and U.S.A. has twenty times. This lack of arable land, coupled with the scarcity of other natural resources, inflicts on Japan the greatest population pressure in the world.

The dramatic increase in population after the war was due to several unusual factors. Chief amongst these was the repatriation of Japanese nationals from the former Japanese Empire. In five years the total reached six and one-quarter million persons; this was offset in part by over one million foreign nationals who returned to their own countries. The repatriation, which chiefly involved males, balanced a wartime decrease in males in the homeland. A second factor was the baby boom of 1947 to 1949 following postwar marriages. The temporary decrease in population in 1945, a result of over two million war deaths, was thus soon made up and the population soared to new heights.

It has been emphasised by most writers that "the most important characteristic in the structure of the postwar increased population was the expanded population of the productive age group". ("Population", *Japan Annual Publications*, Tokyo, 1958, p. 317.) Not only is the present productive age group of those aged fifteen to fifty-nine large, some sixty per cent, but with reduced mortality there is a high probability that most of the children of the baby boom period will live to reach the productive age of fifteen years. Japan's immediate difficulties lie, not with present or future Japanese babies, but with the absorption into the economy of the children who have already been born and who are now moving into the productive age group.

The live birth rate today is at a low level, comparable with such countries as New Zealand and U.S.A. Births are controlled by contraceptive methods and induced abortions ("to safeguard the mother's health"). The Japanese have no religious prejudice against birth control and with a generally high level of educational facilities family planning is spreading from urban to rural areas and it is considered that the birth rate will fall still further. Tachi Minoru points out that on an average each woman in Japan was giving birth to 2.36 babies and if this rate is reduced to 2.3 babies and the mortality rate remains at its present level, the population will become static. It is not thought that the death rate, already low, can be appreciably lowered in future. Inevitably it will rise as an increasing proportion of the population become aged; but this will have little effect in the near future and the population will top the hundred million mark in the early 1970s. Some authorities estimate that the present one per cent

increase in population will give place to a decrease by the 1990s. It is also estimated ("Population", *Japan Annual Publications*, Tokyo, 1958, Table IX, p. 323), that in the early 1970s the productive age group will rise to sixty-seven per cent and remain at this peak before gradually declining about 1990.

Shigeto Tsuru ("Employment in Japan: Problems and Prospects", *Far Eastern Survey*, 26, 7, July 1957) states that in the period 1950-55 the bulk of the expanded labour force was absorbed into the tertiary industries and only seventeen per cent into manufacturing, but he indicates that this imbalance may have been a result of wartime dislocation. It is of great significance that the number employed in agriculture decreased during this time; no longer can townspeople retreat to the rural area in times of economic hardship.

There were only three-quarters of a million fully unemployed persons in 1955. Disguised unemployment and underemployment are, however, characteristic of the Japanese economy and Dr Tsuru estimates that as much as twenty-five per cent of the labour force falls into these categories. Included would be family labour employed on farms, or in small industries, those classified as "not in the labour force" but who wish to work, and low-income independent proprietors. Some of these people work long hours on piecework, yet receive inadequate compensation and produce little. Underemployed people can be included with those entering the labour market. Dr Tsuru states:

"We may say that a full employment program for Japan in the immediate future has the task of creating roughly 900,000 to 1,150,000 jobs per annum, depending on the modesty or boldness of the planners."

After stating that the critical years will last until about 1970, he continues:

"If we can plan and implement a massive public works program for this period employing something like 500,000 man-years per annum in labour-intensive projects, the question of absorbing the remainder will not be very serious."

He goes on to state:

"But this possibility must be considered somewhat academic, since the present administration in Japan does not seem to be thinking in terms of an emergency public works program."

With primary industries already over-supplied with labour the annual additions of about one million workers must be absorbed into the secondary or tertiary industries. This implies that in these industries there will be an annual growth in the labour force of over three per cent. Japanese industrial employees increased in numbers at less than two per cent during the last decade in a period of phenomenal growth and it is not considered that this rate can be increased. Productivity too must rise if Japan is to remain competitive in the export market and an increase in the number of employees would not necessarily result in increased production.

Expansion in future will probably be in the heavy and chemical industries which demand high capital investment. Direct United States aid, an important source of new capital, ceased in 1952 and procurement expenditure for the Far Eastern forces is chiefly important for helping to close a balance of payments gap, not in providing new capital. Thus capital for expansion must now be raised internally. By Western standards the Japanese have a low national income, one-quarter that of the British, and as a consequence a low potential of investment funds.

Limits on industrial expansion are imposed too by Japan's dependence on imports of raw materials, which in turn must be paid for by increased exports. In 1957 imports exceeded exports by thirty per cent, bringing to a head an economic crisis and although deflationary measures restored some stability the need for additional imports would impose further strains. Labour-intensive public

works directed to increasing food production would have some effect on reducing imports but in 1958 raw and fabricated basic materials made up 62.5 per cent by value of imports and foodstuffs only 19.7 per cent.

There has been a tremendous state drive to increase exports, with the "link system" to stimulate manufacturing, trade agreements—particularly with South Asian countries, and a large advertising campaign in both the East and the West. Southeast Asia, taking twenty-five per cent of her exports, and North America taking twenty-three per cent, are still Japan's best customers but Africa now purchases sixteen per cent of Japanese exports. Trade with China is desirable, but this is a casualty of continuing American friendship and goods which Japan desires from China are those which are most needed by that country for its own development.

Dr Tsuru considers that the expansion of exports is the most vital factor which will stimulate employment but he does not overlook some combination of an export drive with a public works programme. American goodwill is probably the main sheet anchor upon which Japan will rely in the difficult times which lie ahead.

J. W. MACNAB

#### THE INDONESIAN DILEMMA

Indonesia, with a population of 84 millions growing at the rate of 1.4 per cent per annum, with great contrasts in population density and levels of development, and with a continuing unstable economic and political structure, poses in an acute form the problems facing the underdeveloped nations of Southeast Asia.

The consequences of overpopulation, as exemplified by Java, are the theme of an illuminating analysis by N. Keyfitz ("Développement économique et accroissement de population: un exemple actuel en Indonésie", *Population*, 13<sup>e</sup> année, 3, pp. 433-440, July-September 1958). As Mr Keyfitz points out, Malthusian theory would lead one to believe that overpopulation might well favour development. Competition between workers would tend to reduce wages to the minimum, and thus permit capital accumulation. In fact, this is not what happens when, as in Java, social customs ordain the sharing out of what work there is. With the Javanese, as with us, work is only necessary because it gives a claim to income (as Professor Galbraith has pointed out, it may well be essential for *The Affluent Society* to divorce production from income and give the latter even to those who do not work). As the population grows, so more and more people are used for the same job. Buffaloes are displaced by men, and fields are dug instead of ploughed. (This degradation of the individual is something which those who object to birth control never take into account.) The consequences for economic development are disastrous. Before the population grows, the countryside produces a surplus of foodstuffs which is sent to the town in exchange for manufactured goods. With more rural mouths to feed, the surplus steadily diminishes, and the towns find that the effective demand for their goods falls. With less food available, its price rises and compels demands for higher wages. Employers turn to labour-saving machinery and techniques; the economy begins to follow a vicious circle. Unemployment and underemployment are continually increased.

From the above, it is clear that mechanisation and other labour-saving techniques applied in the country can have the effect of denying people their right



to a share in the harvest. Far better to install urban manufactures of consumer goods other than foodstuffs. Country people will then be more eager to save some of their share of the harvest for exchange with urban goods. If this process is not to be frustrated, however, urban industry must be of the labour-using rather than the labour-saving variety; the latter simply throws more people into unemployment.

It is sad to record that these requirements of the situation are far from being met. On the contrary, the industries being set up in many parts of Asia are among the most highly mechanised—cement factories, power stations, chemical plants—while earthmoving is often by bulldozer. In a situation where capital is scarce but labour plentiful, this is hardly a rational policy.

The choice, as Keyfitz stresses, appears to be between the totalitarian method of destroying the social institutions which ordain the sharing-out of work, or the democratic method of changing the institutions slowly, but rapidly increasing the supply of food. It would be as well if those concerned with Asian development bore these choices in mind.

It is sometimes argued that overpopulation would be solved by moving people from the more to the less densely populated parts of the world. This overlooks the fact that the populous areas are probably so for good reason. This is clearly illustrated by W. F. Wertheim's study of the movement of Javanese to the southern part of Sumatra ("Sociological Aspects of Inter-Island Migration in Indonesia", *Population Studies*, XII, 3, pp. 184–201, March 1959). The conclusion emerges that the migration simply transplants the population problem; it does not solve it. The soils of Sumatra are nowhere near as fertile as those of Java, and the centuries-old irrigation works of Java are lacking. Furthermore, the "spontaneous" migrants, who are not under government control, are following practices which are eroding the soil.

The lesson to be drawn here is that overpopulation cannot be deduced from a mere statement of the number of people to the square mile. Many other factors have to be taken into account: the quality of the soil and, especially, the technology in use, are among the most important. The Javanese migrating to the outer islands adopt no new technology, but retain the old. It barely gave them a living in the fertile soil of Java, it does little better in Sumatra.

Professor Wertheim could also have mentioned the important finding by H. de Meel ("Demographic Dilemma in Indonesia", *Pacific Affairs*, Vol. 24 (1951), pp. 266–283) that the rate of reproduction on the outer islands is greater than it is on Java. It is therefore abundantly clear that migration of population to less populous areas is likely to be self-defeating and simply postpones the measures that have to be taken. Professor Wertheim consequently favours immediate industrialisation of the less populous islands as well as of Java; subject to the proviso that the industry should be adapted to the conditions of Asia, mentioned above, one can endorse his plea.

A self-defeating internal "migration" programme, the erection of labour-saving industries, are only two examples of the ineptitude with which Indonesia is tackling her economic problems. These problems have been discussed by J. M. van der Kroef ("Indonesia's Economic Future", *Pacific Affairs*, Vol. XXXII, No. 1, pp. 46–72, March 1959) whose article should be read by all concerned with economic aid programmes in general, or Indonesia's development in particular. It is likely to shatter many comfortable illusions.

Indonesian developments lead one to wonder if the universal education recommended as a nostrum for underdevelopment does not, in fact, militate against it. One of its first consequences is to arouse demands for the absorption of the educated into the government service. In an underdeveloped country, by definition, few other outlets are available. Indonesia has succumbed to this pressure.

The author tells us that before the Second World War the total number of colonial government employees in all categories remained below 250,000. By 1955 the figure had grown more than fivefold; and they consumed nearly forty per cent of government revenue. Such large numbers must be given work: or at least nominal responsibilities. Hence the entry of the State into every possible field. (The polite term for such empire-building is "collectivism".) Unfortunately, the bureaucracy's activities are now repressing economic activity, not encouraging it. As the author states (p. 61) "... the seemingly endless manipulation by the government of all phases of production and the resulting drying up of many primary sources of wealth, these are of [Indonesia's] own making".

The detailed results are saddening. Widespread corruption in the bureaucracy; the erection of state corporations with incompetent political appointees in charge; the creation of a parasitic "entrepreneurial" class who neither produce nor take risk, but are subsidised by government; the growth of a new landlord class which pays virtually no tax; shortages of consumer goods, even the all-important petrol; a continuing inflation oddly coupled with a recession of domestic industry; discouragement of foreign capital; and the increasing use of foreign exchange for consumption purposes at the expense of domestic industry.

The dilemma it poses for those who wish to help is obvious enough. If aid is given in present circumstances, the probability is that it will be wasted. Yet no foreign government could insist that the heads of state corporations be chosen for their efficiency rather than their politics; nor that the domestic producers have the bureaucratic shackles removed; nor that the government favour small labour-using industry rather than the highly mechanised. It seems we must be content to insist on the efficiency of the projects to which we contribute directly, and have faith that in the welter of inefficiency and corruption, they will still do some good.

LESLIE H. PALMIER

#### CARGO CULTS AND SOCIAL CHANGE IN MELANESIA

Over the last few decades culture contact between the West and the native societies of the Pacific, Africa and the Americas have induced varying forms of social change in these areas. The character of this change depends mainly on the force of Western impact, the agents of contact, world market conditions, and the character of the native culture in question. In particular, native societies have had to face many problems of cultural adjustment that have arisen at both the personal and group level. The process of change often becomes articulate in various "movements of protest" that vary from "cargo cults" among some of the less advanced cultures, to the formation of political parties or trade unions organised largely on an ethnic or cultural basis among the more sophisticated, urbanised societies.

To a geographer, many of these "expressions of a people in distress" seem to stem initially from a condition of disequilibrium between man and his environment resulting from the penetration of Western culture. Accompanying this disturbance of the native's adjustment to his habitat is the more serious shattering of much of his traditional value system and other focal elements in his culture, leading to bewilderment, frustration and a sense of inferiority. It is these economic and mental revolutions which, under certain conditions, give rise to cargo cults. Some of the most famous of these numerous cults have been the Tuka movement

of Fiji, the Milne Bay Prophet movement of Papua, the Taro cult of Australian New Guinea, the Vailala "Madness" of Papua, the Naked Cult of Espirito Santo, New Hebrides, the John Frum movement of the New Hebrides, the "Dog" movement of the Duke of York Islands, and Masinga Rule in the Solomons.<sup>1</sup>

What is a cargo cult? A typical movement has been described by R. M. Berndt in "A Cargo Movement in the Eastern Central Highlands of New Guinea" (*Oceania*, XXIII, 1 and 2, Sydney, September and December 1952). In 1944 in some villages in the area rumours spread from the Markham Valley that various goods had been sent to them by the spirits of their deceased kinsfolk. It was believed, however, that Europeans had intercepted them, and instead of passing them on had put them in trade stores, requiring the people to work for money in order to procure them. Having discovered that the commodities had been stolen, the spirits were now ready to come and distribute them to the rightful owners. Their arrival would inaugurate a new way of life. To prepare for this event a leader (an ex-indentured labourer) was appointed to serve as a medium between the people and the spirits with whom he communicated on a "wireless". Graves were swept clean, weapons, utensils and surplus food destroyed, and gardens neglected. Outside the leader's special house a pole with rungs was erected for spirits to climb up to God, and at its base the followers were anointed with coconut oil. It was believed that anointing would enable the people to shed their skins and so become white; then they would receive all the goods and clothing used by Europeans.

A better known movement is the cult called Masinga or Marching Rule, which flared up in Malaita and neighbouring islands with the departure of Allied troops from the Solomons. The myth of the coming of the cargo was again a central feature, combined with demands for high wages, education and even political independence. When military drilling and the exaction of monetary contributions followed, the Administration attempted to suppress the movement. However, the cult persisted into the early 1950s, becoming proto-nationalist in form.

Numerous attempts have been made to formulate a general explanation for cargo cults. The approach of C. S. Belshaw deserves comment, for he maintains that similarities between cults are directly due to a common element in the conditions in which they flourish. Common features that occur in widely separated areas are the "cargo myth, hysteria, rapidity of climax, dreams and second sight, and a mixture of traditional legend and biblical characters" ("Recent History of Mekeo Society", *Oceania*, XII, 1, Sydney, 1951, p. 7). Other common features noticed by several observers have been summarised by Berndt (p. 152). Thus there is an underlying idea that all trade goods have been manufactured in the spirit world by ancestors as gifts for their descendants, but they have been misappropriated by the white man. A cargo of European goods is to be brought by the ancestors, and its arrival will provide the natives with the means of power equal to that of the white man. Associated with these ideas is the common belief in the disappearance of the white man and his rule, prophecies, mass demonstrations, convulsive twitching occur and wish fulfilment or achievement by fantasy is commonly expressed through the use of European symbolism. Frequently movements continue well after the non-arrival of the cargo or of ancestors on the appointed day. Most cults are led by men of unusual personality, who often stand to gain in status or wealth through the movement, although these are only

<sup>1</sup> Much of the extensive literature on cargo cults is given in Ida Leeson, "Bibliography of Cargo Cults and other Nativistic Movements in the South Pacific", *South Pacific Commission, Technical Paper No. 30*, Sydney, 1952.

secondary motives. The medium commonly claims to have been given a sacred order or charter by the spirits.

In considering the various explanations that have been attempted, it now seems clear that interpretations based merely on single causes are inadequate in themselves. Thus while Max Weber's "theory of charisma" sheds light on one significant aspect of cults as a form of social action, it leaves unexplained many common manifestations. Many prophets are indeed "charismatic leaders" who are "set apart from ordinary men and treated as endowed with supernatural, superhuman, or at least specifically exceptional powers or qualities" (*The Theory of Social and Economic Organisation*, London, 1947, p. 329). But since leaders are only thrown up by certain social conditions, their function hardly appears to be basic in the whole movement, even though it might be agreed that charisma "is a phenomenon typical of prophetic religious movements or of expansive political movements in their early stages". It is rather in these social and economic conditions—the seedbed in which cults grow—that the true causes of cargo cults must be sought.

In the same way, attempts to use exclusively Ralph Linton's theory of "nativistic movements" appear to be inadequate, although his approach seems to be one of the most illuminating ("Nativistic Movements", *American Anthropologist*, 45, 1, Menasa, 1943, pp. 230–40). A "nativistic movement" is any conscious attempt on the part of a society's members to revive or perpetuate selected aspects of its culture. In many cargo cults revivalism is evident in attempts to destroy European property and restore the old way of life, or at least cherished features of it banned by the missionaries. Such a nativistic, or "contra-acculturative" viewpoint has been taken by M. J. Herskovits in describing movements "... wherein a people come to stress the values in aboriginal ways of life, and to move aggressively, either actually or in fantasy toward the restoration of these ways, even in the face of obvious evidence of their impotence to throw off the power that restricts them" (*Man and His Works*, New York, 1949, p. 531). But as Peter Worsley has stressed in *The Trumpet Shall Sound* (London, 1957), cargo cults are characteristically forward-looking as well as backward-looking, expressing expectations of supernatural bliss or material benefits that were no part of the traditional order.

Worsley focuses attention on the social and economic factors created by the conditions of contact and presents an historical analysis in Marxist terms of "activist", "millenarian" movements—i.e., ones in which people actively prepare themselves for the "Day". He stresses the vagaries of the European economy as significant in undermining the natives' confidence in rational activity, creating frustrations and sapping their morale. The phenomenal fluctuations in the price of copra in the inter-war period are thus seen to be a prime factor in engendering social crisis. W. E. H. Stanner had earlier noted the natives' disenchantment with the European economy due to the unfavourable colonial terms of trade and the repatriation of savings and net profits by European enterprise: "A simple calculation of New Guinea imports as a proportion of the value of exports shows a marked downward trend between 1920–40" (*The South Seas in Transition*, Sydney, 1953, p. 73). Worsley also emphasises native ignorance of the processes of factory production; since the whites' material wealth was clearly not produced by the few missionaries and patrol officers, its acquisition seemed to be due to the possession of some secret magical power. Added to these factors were conditions of economic uncertainty and instability resulting from diminishing crop production as more and more of the young men abandoned village

gardens to become indentured labourers on the European-operated mines and plantations. Thus in the Taro cult, horticulture, which was the central economic activity of the people acquired a special economic significance "as epitomizing the maintenance of the well-being and viability of the society as a whole". Furthermore, Melanesians began to feel that real education was being withheld from them, thus placing "special emphasis in cult-programmes upon obtaining the 'secret' which the White man was concealing". This provides Worsley with further grounds for refuting views which see in cults "nothing more than an atavistic rejection of European culture".

Social and economic aspirations for the power and riches of the white man are thus cast in a religious mould. The hysterical phenomena of cults are seen to be "... the product of the ambivalent attitudes and feelings of men torn between hatred of the White people who had destroyed the old way of life and who now dominated them by force, and the desire to obtain for themselves the possessions of these very Whites". The force of the economic motive is certainly great, but it has been noted by Raymond Firth that this is linked with communication facilities. A rapid increase of these facilities almost inevitably leads to a rapid expansion of wants" ("The Theory of 'Cargo' Cults: A Note on Tikopia", *Man*, LV, London, Sept. 1955, p. 130). The generation of new needs is probably less effective than the existence of a markedly uneven relation between a system of wants and the means of satisfaction. Worsley in general concludes that the powerful emotions evident in cults express a "... desperation growing out of their ambivalent attitude toward European culture, their confusion at the queer fluctuations of the European-imposed order, and the frustration of their growing wants at a time when higher production and harder work often brought only diminishing returns" (pp. 44-45).

Worsley's economic interpretation is convincing, and on the whole, his attempt at a unified general explanation is successful. There are times, however, when he has considerable recourse to aspects of other general explanations to validate his conclusions. While Judy Inglis' attempt to isolate factors that are not only common but also peculiar to all cult-situations is perhaps a better method ("Cargo Cults: The Problem of Explanation", *Oceania*, XXVII, 4, Sydney, June 1957, pp. 249-63, and "Interpretation of Cargo Cults—Comments", *Oceania* XXX, 2, December 1959), one may note that a particular set of factors in one culture-contact situation can trigger off a cult, while a very similar set in another situation may not do so. To this reviewer at least the difference seems to lie possibly in functional relationships between integral elements of culture, and, in particular, in the manner in which revolutionary changes in values and attitudes affect other focal elements of culture.

The proliferation of cults in Melanesia seems to be explained by Belshaw by his belief that cults thrive in "half-way" (or perhaps "quarter-way") communities, although Guiart, Berndt, Firth and others oppose this view, noting that cults have occurred among societies at the earliest stages of culture-contact, and also among Christians of long standing. Certainly the impact of the West has generally destroyed those mechanisms that resolved internal forces of disension—the "peace in the feud" that Max Gluckman has noted in African societies (*Custom and Conflict in Africa*, Oxford, 1955). Worsley holds that they occur in the main in relatively "primitive" "stateless societies" where people live in small, isolated social units. Cults thus serve as an institutional integrating force to a people in need of political institutions. If this is true, one can agree with Guiart in conceiving of some cults at least (e.g., Masinga Rule) as "fore-runners of Melanesian nationalism" (*Oceania*, XXII, 2, Sydney, Dec. 1951, pp. 81-90).

R. F. WATTERS



## POST-WAR MIGRATION TO AUSTRALIA

The various aspects of post-war immigration into Australia have been analysed by many writers in both Australian and overseas journals. This is not surprising as this immigration has involved the movement of one and a half million people (to the end of 1959), and has greatly influenced the economic, social, political, demographic and religious structure of Australia.

C. A. Price, writing on "The Effects of Post-war Immigration on the Growth of Population, Ethnic Composition and Religious Structure of Australia" (*The Australian Quarterly*, 29, 4, December 1957, Sydney, pp. 28-41), claims that Australian migration statistics are among the best in the world but stresses that there are several important gaps in the migration records. The statistics conform to the international usage of terms, such as "permanent arrivals", "net migration", etc., adopted by the International Conference of Migration Statisticians in Geneva in 1932. It is, however, unfortunate that the terms as thus officially defined make it impossible to determine how many of the "permanent arrivals" are Australians returning after trips abroad, visitors who intend to stay a year or so and then depart, or persons who intend to settle in Australia. Likewise, it is impossible to discover from these internationally recognised terms how many of the persons who landed in Australia intending to settle have later changed their minds and left again. Further, since the classification "British Nationality" includes not only persons of British origin but also Maltese, Cypriots, Asians of British nationality, persons of alien birth who acquired British nationality before migrating to Australia, and others, it is impossible to separate persons born in Britain from those of British nationality. In view of the importance of the ethnic composition of immigration, this is a serious deficiency. Data on the religion of the migrants is also inadequate. Price examines these gaps in detail, and tries to fill them with material from other sources, especially the full tables of the Census of 1954.

Using very ingenious methods, Price estimates how many "new settlers" have come to Australia. There is no easy way of finding out the number of really new permanent arrivals from the statistics of permanent arrivals, net permanent migration, or net total migration; an additional difficulty lies in the international definition of "permanent departures". Price comes to the conclusion that about fourteen per cent of the migrants ("permanent arrivals") are not new settlers—i.e., not permanent additions to the Australian population—so that, at the time of the much celebrated arrival of the millionth migrant in October 1955, Australia had actually received about 860,000 genuine new settlers. Another of Price's findings was that the British proportion in the total number of settlers that Australia has succeeded in keeping is slightly less than thirty-four per cent as compared with the usually quoted figure of 47.4 per cent derived from the nationality statistics of "permanent arrivals".

Analysis of the religious affiliations of Australia's post-war settlers suggests that in the intercensal years (1947-1954) the proportion of Roman Catholics amongst new settlers (forty per cent) was nearly twice as high as the proportion in the total Australian population in 1947, and that of the Lutherans about five times as high.

Price concludes his penetrating study by stating that "it is quite time that Australia supplemented the somewhat inadequate international conventions now in force so that persons interested could make an accurate assessment of the position concerning new settlers without having to adopt the roundabout methods used in this article".

The emphasis is on economic aspects of immigration in Part Two of E. J. Donath's article on "Australia's Population: A Demographic-Economic Study" (*The Australian Accountancy Student*, July 1958, pp. 82-87). After a brief

survey of the part immigration has played in the demographic history of Australia, detailed figures are given of the post-war decade, and some industries in which the immigrant labour force has been especially high are discussed. Immigration's influence upon inflation, balance of payments difficulties, shortage of housing and educational problems are discussed; it is estimated that Australia saved the sum of £3,000 million for feeding, clothing, rearing and training to working age the 600,000 adult migrant workers who joined the Australian work force. The distribution of migrants among the States is also discussed, as well as the "bachelor problem" caused by the disparity in sexes among the migrants; 160,000 more male than female migrants came to Australia.

The distribution patterns in Australia of "New Australians", i.e., immigrants of continental European and Maltese origin, are discussed by A. J. Rose in his article on "The Geographical Pattern of European Immigration in Australia" (*Geographical Review*, 48, 2, October 1958, New York, pp. 512-528). The discussion is based on the "Country of birth" data in the Australian census of 1954, and Rose comes to the conclusion "That although the general pattern of distribution of immigrants tends to follow the general Australian pattern rather closely, there are many variations". His study is supported by four tables and eight maps. After discussing in general terms the factors influencing the geographical distribution of immigrant groups, Rose points out how, in the settlement of Europeans in Australia, these general considerations have been modified by a number of specific factors, but "the dominant specific factor in the location of immigrants has been neither the direction nor restriction but the positive force of economic attraction arising from new openings in an expanding economy characterised by a general and rather persistent labour shortage . . . the principal immigrant concentrations correspond rather closely with the industrial areas in the state capitals, other cities, and regions with large-scale public works". In Australia as in other immigration countries migrants show a distinct tendency to settle differentially in certain kinds of environment. Rose discusses at length the settlement of migrants in the four habitats recognised in Australia: Capital cities, Industrial cities, Country towns, and Rural areas. The Maltese, for instance, seem to concentrate in small, clearly defined, areas and are clustered most densely in Sydney and Melbourne, which together contain seventy-two per cent of the Maltese-born living in Australia. On a broader scale, a striking feature is the high concentration of migrants in two rural areas. The first is the Cairns division of North Queensland, the main sugar-cane growing area of Australia; in this small district are twenty-five per cent of all migrants living in Queensland, constituting over thirteen per cent of the population. The district has been termed "Little Italy" for 9,000 of the 13,000 migrants are Italians. The second rural area consists of the alpine regions in the southern part of Australia where irrigation and hydro-electric development have attracted men of many nationalities (Snowy Mountains, Bogong High Plains, Tasmania). Rose also discusses briefly the demographic, economic and social impact of immigration, concluding: "Although it is commonplace among Australians to condemn the immigrants on the score of undue city orientation, it is noteworthy that the immigrants are simply following the pattern set over many decades by native-born Australians themselves. And two of the most numerous groups, the Italians and Dutch, prefer the rural habitat to a greater extent than the Australians do."

The influence of immigration on population structure, industrial work force and industrial expansion has been analysed by E. R. Woolmington ("Post-War Immigration and Industrial Development in Australia", *The Australian Quarterly*, 30, 1, March 1958, Sydney, pp. 77-89). He comes to the conclusion that "The immigrant contribution, and particularly that of the new non-British element, to Australia's post-war industrial expansion has been a critical one . . . the influx of

Continental Europeans especially has materially assisted Australian workers in their search for better conditions by enabling more of them to select the more comfortable—and perhaps more profitable—occupations more easily than would otherwise have been the case.”

Woolmington discusses those industries in which immigrants, especially non-British migrants, tend to find employment easily, and those where immigrants' penetration is substantially lacking. “To a degree, this is a consequence of government policy, where immigrants, particularly the government-assisted ones who constitute the great majority, have been recruited with specific regard to the needs of expanding basic industries.” Of the 9,000 workers of the Port Kembla steel-works, for instance, forty-one per cent were post-war migrants, and thirty-five per cent were non-British. Thus resulted an unequal distribution of migrants between the basic or “dirty”, and the less unpleasant or “soft” industries; the British immigrants for a number of reasons tend to follow the Australian pattern. The most significant influence upon the age structure was that about two-thirds of the post-war expansion of the Australian work force was due to immigration. Woolmington to a certain extent goes over the aspects discussed by Price in his above-mentioned article; however, the uneven distribution of British migrants, Continental migrants and native-born Australians among the various branches of manufacturing is properly stressed. Unfortunately, no attempt was made to discuss the extent to which some nationalities have penetrated certain branches of Australia's tertiary industries, apart from the well-known predominance of Greeks and Italians in the fruiterer and restaurant trades.

A. J. Rose's study of “Some Social Aspects of Australia's Immigrant Population” (*The Australian Quarterly*, 30, 3, September 1958, Sydney, pp. 56–71) covers much of the ground discussed by earlier writers. His investigation of the marriage patterns of migrants, however, represents an original contribution to the literature on immigrant communities. His analysis of co-national marriage, inter-marriage with Australians, and marriages among new Australians of different nationality shows clearly that “it is dangerous to generalise about the social behaviour of any immigrant group in general. Thus, although the Netherlanders are geographically the most dispersed of all the groups, they have a relatively high rate of co-marriage. Czechoslovakians, on the other hand, marry fellow-nationals to a lesser degree than other Eastern Europeans, yet they cluster to a greater extent than any other East European group apart from the Ukrainians. Most consistent of all are the Southern Europeans, who in general couple a high degree of clustering with a marked tendency to co-marry. But even here the matter is not clear-cut. The Greeks cluster to a greater extent than the Italians, but their womenfolk do not marry fellow-nationals to nearly the extent of Italian women. The same applies to Maltese.” Perhaps the most important discovery was the great extent of marriages between New Australians of different nationality. This feature demonstrates again the resistance of native-born Australians to association with New Australians; to a certain extent, unfortunately, our New Australian migrants are forced to form one single community distinct from the Australian and the British. Rose's study shows clearly that the assimilation process which Australian's often demand very forcibly is to a large extent slowed down by the attitude of the native-born Australians towards the immigrants, especially the non-British. Mrs J. Hammet of the Mental Hygiene Authority in Victoria, discusses “Migrant Adjustment and Personal Identity” (*The Australian Quarterly*, 31, 2, June 1959, Sydney, pp. 40–49) in an original and searching investigation of assimilation as a problem of personal identity. Her findings based on Australian experience should be of great importance to any immigration country which demands quick assimilation: quite refreshing is her questioning of a special

"Australian way of life", and of the presumption that "the Australian pattern of human decency must be infinitely superior to any other pattern".

Practically all students of Australian immigration have come to the conclusion that it has been a great success from the economic point of view; one and a half million migrants have been absorbed into the economic life of the country without any serious difficulties. It is, however, very doubtful whether they have been assimilated into the Australian community as a whole. The often-heard demand of "assimilation in one generation" is obviously unreasonable and impossible to attain; such a demand, indeed, might spoil the chance of assimilation for the second generation.

E. J. DONATH

#### THE MAORI IN TOWN AND COUNTRY

A group of Maoris and Pakehas were once discussing the changes that seemed necessary if Maoris were to make the best use of their resources and opportunities. Listening to them was an elderly Maori woman who exclaimed feelingly at one point, "Why must it always be the Maori who changes?" To her it seemed that the Pakeha was "sitting pretty" and asserting that the Maori's only chance was to be more like him. In the course of her life this woman had successfully adapted herself to new conditions, but she had grown tired of the continual demand for further change.

That the Pakeha himself may sometimes be appalled at the sweeping changes coming over his own society may not be obvious to the Maori upon whom the need for re-adjustment is being continually impressed. The world in which the Maori lives is so different from that of his parents and grandparents, his cherished values are so frequently called into question that it is no wonder that many, like this woman, long for a stability that has been denied them.

Ernest Beaglehole ("The Maori in New Zealand", *International Labour Review*, LXXVI, 2, Geneva, August 1957) has given a useful general survey of the Maori adjustment to a dominantly European type of society, and shows that, in spite of many setbacks, the relationship between Maoris and Europeans in New Zealand is now to a considerable degree marked by justice and goodwill. He points out that in broad terms the choice facing Maoris is between assimilation, with a complete loss of Maori culture as such, and integration, by which he means a situation where the two cultures remain distinct although Maoris may participate fully in the national economy and the political life of the country. Like many others, the woman who was weary of change would undoubtedly choose the path of integration as it would leave her the comfort she finds in the activities and institutions derived from her Maori culture.

The extent to which the European economy dominates the lives of Maoris, even though they live in a remote bush settlement long isolated from European contact, is shown by John McCreary and John Rangihau (*Parents and Children of Ruatahuna*, School of Social Science, Victoria University of Wellington, 1958). For the people of Ruatahuna complete assimilation is not likely to occur for many years. Their community is made up almost entirely of Maoris and for them the question is one of how the values implicit in their native culture can

be modified so that the optimum good can be gained from their present economic opportunities. Still relatively isolated, they probably have as good a chance as any community to develop a modern Maori culture. One of the conclusions reached by these authors could, however, apply equally well to many other settlements, particularly in East Coast districts and in North Auckland. They write on page 13, "From the comments of people themselves, then, we can conclude that there is a group who would like to see their children stay in the valley, not only because they dislike breaking up a family but also because they feel there are positive advantages in living in Ruatahuna." The advantages referred to were almost all associated with the values enshrined in their own Maori culture.

For many communities besides Ruatahuna it is obvious that only a small proportion of the children now growing up can hope to spend their working lives in their childhood homes. We know that many of them, when they move, will carry with them some of the practices of their home people and will join with their kin or with other Maoris in perpetuating many of their cultural institutions. This has been true even of those who find themselves in the cities. It is plain, though, that on first experience of the new environment many Maoris pass through a period of considerable confusion. From studies of Maori crime it seems that the person who has lost his footing in one culture without finding it in the other, who is not certain of his own cultural status, is more likely to fall into crime than is the person who accepts more fully either the Maori or the European way of life. Making a decision between assimilation and integration may be quite an urgent task for Maoris settling themselves in a new community.

The June 1959 issue of *Te Ao Hou* (No. 27, Special Auckland Issue, The Department of Maori Affairs, Wellington) gives a vivid impression of some of these difficulties and of the successes of Maoris who have made a new home for themselves in New Zealand's largest city. Roi te Punga, himself a Maori who has proved his ability in a responsible administrative post, discusses some aspects of Maori crime in Auckland. It is apparent that unfamiliarity with the city situation, or a lack of standards applicable to this situation, is an important factor in the genesis of Maori offences. Other articles in the same issue make it plain that Maoris migrating to Auckland will face many difficulties in finding suitable accommodation and employment and in making those changes in their pattern of living that are demanded by the urban environment. *Te Ao Hou* also gives an account of some of the institutions—clubs, the community centre, church groups, etc.—through which many city Maoris retain a link with their own culture.

The members of these groups are Maoris who, even in the city environment, have chosen the way of integration because they feel that Maori culture has something of value for them. There are hundreds of others, however, who have only rare contact with any Maori organisation. Some have deliberately chosen to adopt European ways, but many, especially new arrivals, find themselves profoundly disturbed by the conflict between the attitudes and habits they have learnt at home and the new ways of acting that are demanded by the new environment. Added to this personal problem are the commonly encountered difficulties of poor housing, low educational standards, a preponderance of unskilled work, low incomes and big family obligations which accentuate the differences between Maori and European. These external difficulties are formidable, but it is doubtful whether any individual Maori's efforts to cope with them can meet with success unless he has resolved his personal uncertainties. This he can only do by working out a routine decision-making process which



will determine where he stands in relation to the two cultures to which he is exposed. Each individual and each community must find a way to remove the conflict generated by their meeting. Failure to do this leads to uncertainty, apathy and the disorganisation of both personality and community.

Disorganisation, expressed in high crime rates, high accident rates, low educational achievement, apathy and so on has become more obvious through the growth of the Maori population, its increasing mobility and the close contact between Maori and Pakeha. Because of the difficulties met by Maoris in a dominantly European society the government long ago set up a special agency, the Department of Maori Affairs, with the intention of reducing the effects of disorganisation by increasing the Maori's participation in the wider New Zealand life that is open to him. Beaglehole describes the Department as a "mediating institution" and this aspect of its function is taken up in the Department's annual report for 1959 (*Report of the Board of Maori Affairs*, Government Printer, Wellington, March 1959) which states that the Department's purpose is "to remove the obstacles that may still hinder the Maori people from achieving full social and economic equality with the Europeans" (p. 15).

Ruatahuna and Auckland are extreme cases of the two different situations in which the Department of Maori Affairs is called upon to exercise its mediating function. In Ruatahuna, the Department deals with a traditional society undergoing modification through the impact of selected elements of European culture. The techniques of community development are appropriate in such a case. In Auckland, on the other hand, the Maori migrant has to adapt himself to a society in which European values dominate the greater part of his day. The Department's task here is one of re-settlement or re-location, mediating between the unprepared individual and his unfamiliar environment. The problem is to help the individual to decide where he stands in relation to both European and Maori culture, to help him choose between assimilation or various degrees of integration.

How far the Maori Affairs Department sees its work as either community development in the established Maori communities or as re-settlement in the communities that Maoris are moving into is difficult to tell from reading its report. The report indicates the extent to which Maori land is being developed and the number of houses that have been built, but one cannot tell how far the work is accepted as essentially social in character, as a mediation between a people and their environment. Whether conceived in such terms rather than in terms of the physical tasks involved will have considerable bearing on its policy and on the effectiveness of the Department's efforts.

The problems of the Maori people, and especially of those moving out from their rural homelands, are certainly not growing any less. In the field of housing alone the Department acknowledges its inability to do as much as is needed. In this, as well as in other fields such as education and employment, the situation is likely to become increasingly difficult. In the final contribution to *Anthropology in the South Seas* (essays presented to H. D. Skinner, ed. by J. D. Freeman and W. R. Geddes, published by Thomas Avery and Sons, New Plymouth, 1959) Bortie points out, "Where there were 11,000 young Maoris entering the employable age groups, fifteen to nineteen, ten years ago, there are 16,000 today, and there will be 22,000 in ten years' time and 40,000 twenty years hence" (p. 262). Any agency offering its services as a mediator between these people and an environment that will still be strange to many of them will need to have a clear concept of the problems that it is facing and great skill in using the means it has to hand for dealing with them.

It has always been noticeable that the majority of Maoris and part-Maoris choose to retain those elements of their culture which do not conflict too seriously with the necessity of making a living in New Zealand's European-style economy. No doubt the choice for many will continue to be integration rather than assimilation. Like the woman who objected to the continual pressure of change, many Maoris in the cities and elsewhere will wish to return occasionally to their own particular Ruatahuna and to bring something of Ruatahuna into a corner of their city.

J. BOOTH

## Geographical Reviews

### DAMS, DYKES AND DESPOTISMS

Karl A. Wittfogel, *Oriental Despotism*, Yale University Press, New Haven, 1957, pp. 556, \$7.50 (60s.).

It is now over two hundred years ago since historians began to discover that the processes of history are not wholly determined either by man's rational ambitions or by God's omniscient providence; and that in describing them, due attention must be paid to a vast number of very irrational elements, including economic and geographical factors that far transcend the importance of individual wills. With this insight, history became a truly empirical study. Unfortunately the pendulum soon began to swing to the opposite extreme, to historicism, and some enthusiastic historians thought that the study of history could now best be carried on if one focused one's attention exclusively upon the framework of these non-human elements and considered individuals themselves merely as the playthings of vast, biological, economic, social or geographical forces. With little empirical study large-scale frameworks were conceived and human history was described as wholly determined by these general factors, and therefore easily predictable. It was this notion of prediction that lent such enterprises a pseudo-scientific respectability—for science is supposed to be able to predict. In fact, such enterprises are based upon a complete misconception of the nature of scientific prediction, and at the present time, where we have both Karl Popper's *Poverty of Historicism* and a large number of very critical appraisals of Toynbee, there is no need to say much about this matter. The book under review, however, is a staggering *reductio ad absurdum* of this whole approach to history, and should do more to discredit historicism than many critical comments.

The author has written an account of Asian forms of government and he has based his analysis upon two very old and very reputable conceptions. The first is that in an area where survival depends upon large-scale irrigation, the state must develop into a fairly totalitarian and despotic enterprise and that in such areas there is little chance for an urban middle-class to develop independent economic enterprises and the social institutions that go with them. The result must be an oriental despotism. The idea goes back to Montesquieu and has rightly been repeated in one form or another ever since. The second conception is that the freedom we enjoy in our modern democratic societies is not based upon an abstract faith in freedom, but upon a balance of power in our societies between state, business interests, labour interests, regional interests, etc. Where there are many powers, no one can tyrannically impose his will on all and everybody will enjoy a certain measure of freedom. This again is an old and honourable insight, known to all readers of Burke, and it was the great merit of Toque-

ville that he warned us that the social revolutions of the nineteenth century might easily result in upsetting this balance of power even in societies that are industrialised and do not depend upon large-scale irrigation works. He realised that, in the name of freedom, states might emerge that are more or less totalitarian and orientally despotic even though they rule industrial societies. The next possible stage for an inquiry might have been an attempt to find the similarities between large-scale irrigation enterprises, notoriously creating totalitarian despotism, and large-scale industrial enterprises, creating social conditions conducive to totalitarian developments. If totalitarian power develops in many parts of Asia this is as likely to be due to a progressive industrialisation which will produce a western type of urban proletariat, as to the persistence of traditions created by the pre-industrial hydraulic societies.

The book under review is, however, not concerned with any such fruitful empirical investigation. The author has instead preferred to illustrate with a wealth of learning how large-scale irrigation schemes give rise to despotism and impede the development of a freedom-treasuring middle class. The book contains some useful historical descriptions of such processes in China and India and some other countries, but there is nothing in it which challenges fundamentally our established views, even though the author's sociological concepts often throw some light on well known historical developments. The point is, however, that of the 500 pages of the book, well over 100 are taken up not with history and sociology but with an attempt to examine the truth of what Marx, Engels and Lenin said on these matters. To Marxist fundamentalists this is no doubt of great importance. But to those that do not have a compulsive fixation upon Marxist doctrine, a few footnotes might have sufficed and, moreover, they would have welcomed some critical words upon the views of non-Marxist authors who have in the past struggled with this problem.

Be this as it may. The intelligent reader must of necessity ask what the point in this whole description is. The author obviously hates totalitarianisms of all kinds, and one cannot but share his antagonism. But this antagonism seems to deprive the book of its point. The argument is based throughout on the historicist assumption that individual ambitions and plans do not matter and that human beings are living their lives in a framework of geographical and economic determinants. Why, then, does the author write as if oriental despotism were something wicked or dishonest? Given the economic and geographical conditions of China and ancient India, on his own assumptions, nothing but oriental despotism could have emerged there. What then is wrong-headed about it? Furthermore, why does he warn us of oriental despotism in the West? On his own assumptions we are safe as long as we do not live by the establishment of large-scale irrigation schemes. All we need to do is to continue industrial enterprise and have towns and there will be no despotism.

The author, of course, knows perfectly well that all this is absurd. There *can* be despotism without large-scale irrigation works. Furthermore, even despotism with large-scale irrigation works is mitigated by human frailty, for no one class of rulers is super-efficient and omniscient, and a certain degree of individual freedom has survived even in Indian and Chinese villages. Natural inroads upon oriental despotism are made by the growth of industry and urban society in Russia, China and India, and as the urban societies in these countries prosper, they will create more room for individual freedom, provided, of course, the urban proletariats are not organised to support the growth of the occidental form of despotism known as fascism. In other words, everything is open, everything can change, and there is no telling how and when.

The historical inquiry to be found in the present book is, however, not likely to throw much light on these questions. For, faithful to traditional historicism,

the author plays fast and loose with the evidence, selects facts with an arbitrary ruthlessness which is itself a form of methodological "oriental despotism". The argument ranges over a wide field and I cannot presume to do more than test it in a case with which I am familiar. The author is so obsessed with the fact that despotism stems from hydraulic societies that he feels obliged to insist that William the Conqueror's Domesday Book, imposed by the Normans upon a non-hydraulic society, must, as an example of despotism, have been due to eastern influences (p. 213). It is questionable whether the Domesday inquiry should be called despotic and it is equally questionable whether the inquisition owed much to Norman experiences in the Mediterranean and their contacts with oriental despotism. At any rate, Saracen rule in Sicily (which the Normans knew best) was, though despotic, notoriously and lamentably unhydraulic. But there is one thing that is most certainly *not* questionable. Domesday Book, whether despotic or not, gave to English feudalism the very twist that made possible the growth of institutions that were feudal and monarchical at the same time. Both parliamentary government and the rule of law are unthinkable without these medieval institutions and we have here at least one case where a despotic inquisition directly contributed to the growth of freedom. One only needs to look at those areas in Europe where there was no Domesday Book: in Italy, for example, feudalism and city life developed like weeds and there the absence of a feudal monarchy helped to generate one attempt at tyranny after another. There was nothing very hydraulic in medieval Italian society, whereas the society in which the author *does* detect the presence of hydraulic modes of tyranny is the one European society that has remained comparatively proof against the seductions of oriental despotism. To elucidate this matter fully would require, however, more detailed historical study than is compatible with the sweep of the historicist imagination.

Since the author presents the development of forms of government as determined by economic and geographical factors, one feels that he considers certain developments as inevitable. Asia can't help being subject to despotism; industrial societies do not get despotism, and so on. These conclusions are not true, of course. But even if they *were* true, they would plainly make the author's moral indignation at despotism logically absurd. He might as soon be morally indignant with God. They also deprive his fears that despotism might advance beyond irrigation areas (beyond hydraulic societies) of all logical foundation. The conclusion is therefore inevitable: the present book reduces the historicist method to absurdity. The author cannot have it both ways: if he is right, we need not worry about politics but only about whether we live by irrigation schemes or by industry; and then his warnings and moralisings are beside the point. And if his moral attitudes are not beside the point (and I am certain they are not!), his analysis is obviously faulty; for in that case there is both more and less to "Oriental Despotism" than this stereotyped analysis reveals.

The author, however, does not address himself to his problem in such blatant moral terms but prefers to present the discussion as one about the nature of progress. He considers oriental despotism and the irrigation economics upon which it is based as a blind alley; and indulges in endless polemics against those Marxists that regard it as a mere stage in the evolution of mankind. Given the fact that the whole notion of progress is not capable of either theoretical or empirical elucidation, it becomes clear that the discussion is no more than an attempt to put a scientific cloak upon a number of value judgments. Marxists, the author seems to be saying, like oriental despotisms and consider them capable of further progress. The author, on the other hand, does not like them, and we must presume that he considers them to be among nature's waste products. (It is hard to imagine what he proposes to do with these enormous waste products.)

But even if one is willing to overlook the attempt to disguise moral judgments and to take the argument about progress at its face value, one cannot get very enthusiastic about it: for the battle which he and his Marxist opponents appear to be fighting is all fought on the esoteric ground of historicism and of Marxist pseudo-scientific sociology, and the reader who is wary of the pitfalls of Marxism and of other kinds of historicism will sooner or later wearily put the book aside because he can have no possible interest in its outcome.

PETER MUNZ

#### ASIA THROUGH AMERICAN EYES

Norton Ginsburg (Editor), *The Pattern of Asia*, Prentice-Hall, Inc., Englewood Cliffs, N.J., and Constable, London, 1958, pp. 929, 70s.

The pace of social and economic development in Asia during the last decade and the increasing volume of literature documenting this development is making it increasingly difficult for the lone scholar to present a full yet judiciously balanced picture of the Asian scene. A Joseph Spencer may succeed, by painting with broad and vigorous strokes, in conveying a vivid impression of this many-splendoured scene and, above all, of the emergence of the major cultures whose distinctive modelling of their environment give the continent so much of its richness. To achieve such a *tour de force*, however, much of the regional detail must be ruthlessly sacrificed; in consequence, while Spencer's volume is long likely to remain the essential work for the geographer or general reader who wants an understanding of the basic patterns of Asia, the student interested in the detail of these patterns must seek this elsewhere.

The volume under review attempts to provide such detail and "to illustrate the various problems and potentials of the countries of Asia". It is a co-operative work, broken into six major sections; each of the regional sections has been written by an acknowledged specialist with long and intimate first-hand knowledge of the region, or "realm", concerned. The advantage of such an approach is obvious; as rightly emphasised in the Preface, "it brings several points of view to bear on a multi-faceted Asia which cannot be regarded as a stamp from a single die". There are, also, obvious disadvantages, notably the difficulty of successfully integrating into a whole the several individual contributions and of ensuring the greatest possible degree of comparability between the various sections. The editor has attempted to overcome this difficulty by providing a general introduction based on the several points of view of the co-authors; above all, by the use of carefully-drawn maps and well-captioned photographic illustrations which give an admirable unity to the work. Nine hundred pages of text, thirty-six maps in the text and two endpaper maps, 161 excellent photos, bibliographies, an adequate index and a pleasing lay-out—all these, combined with the authority with which its contributors can speak, make it a fundamental volume for all geographers interested in the Asian scene.

Yet, in spite of all its admirable qualities and despite the painstaking five years of effort which have gone into its preparation, it remains in many respects an unsatisfying book. Partly this is because of the lack of balance between the systematic and regional sections, partly because of the rather anomalous allocation of space between the various major regions of the continent: Sixty-five pages out of 900 are devoted to a description of the physical and human background of Asia as a whole; of this total, forty-five pages, or one-twentieth of the volume, are concerned with the human geography of "Asian Asia". The treatment cannot but be superficial and, while it is true that the student can always turn to such works as *Asia East by South* for such background material, the advantages, in a text of this size, of a fuller discussion of the basic elements in the Asian scene



would have been very great. Such aspects as the pattern of diseases, population (including settlement forms, growth rates and cultural regions) and contrasts in levels of social and economic development might well have been included; against such a background the regional detail would emerge in sharper focus. And, since the volume is concerned with the "potentials of the countries of Asia" and "the processes of change which are radically transforming the Asian landscape", some treatment of political and economic systems in the introductory chapters would seem essential. The great contrasts between India and China in the pace of economic development and in the degree of transformation of their cultural landscapes results primarily from the contrasts in political systems and scales of values in these two countries, rather than from basically different resource endowments. To describe the role played by the Communist Party in China's resurgence does not necessarily imply any sympathy for the ideals it represents but it does help to explain both the pace of development in China and the logic behind the new patterns of industry and agriculture which are emerging.

This cautious avoidance of controversial or uncomfortable topics may help to explain the lack of balance also in the regional sections. The allocation of space to each major region becomes more meaningful if seen against population figures. Per ten millions of inhabitants the allocation of pages is as follows: Southwest Asia 30, Southeast Asia 9, Japan 8, Indian subcontinent 5, China 2; expressed in other terms, China's 600 million people, two-fifths the population of Asia, are crammed into one-sixth the area of the book. No one, and above all a New Zealander, coming from a country of less than three million inhabitants, would demand a strict allocation of space to countries on a purely population basis, nevertheless in the case of China, the actual and potential importance of the country in relation to Asia and the Pacific world is so great as to call for a much more generous allocation of space. It is noteworthy that, while the Soviet Union is excluded by definition from "Asian Asia", some sixty pages are devoted to the U.S.S.R. since, as the writers observe: "No discussion of the political and economic geography of the rest of the continent can help but return repeatedly to the political—and to a certain extent the cultural—influences that the Russian empire can and does bring to bear" (p. 22). Such considerations make the restricted treatment of Chinese development even harder to justify since China is tackling problems similar to those faced by the other countries of "Asian Asia" and not only is her experience more relevant to these countries than that of the U.S.S.R., but also the attraction of the solutions she is finding will be the greater. Indeed, a more realistic appraisal of the Asian situation might have suggested that the space occupied by the two chapters on the U.S.S.R. could more profitably have been devoted to a fuller treatment of the Chinese experiment.

As it is, the Chinese chapters are the weakest section of the volume. Largely this is the result of the intellectual quarantine into which China has been put by the West, which means that the majority of Western geographers have no first-hand knowledge of recent developments. Since it is fashionable to ignore official Chinese data the analysis must be based on either outmoded sources (of the sixteen references on "Industry and Commerce", given on p. 256, twelve deal with pre-1949 conditions), on official American digests of the Chinese press, or on superficially scientific analyses such as that of Rostow. The work of writers such as Adler or Fitzgerald is ignored. In consequence, the agricultural co-operatives are misleadingly described as "collective farms", agricultural poverty is said to be due to "an actual shortage of cropland" (p. 208) and little more than a page is devoted to the recent industrial revolution. In a bibliographical comment (pp. 256-7), the writer admits that earlier analyses may become invalid as a result of changed political conditions but adds: "Nevertheless, the practical operation of the Chinese economic system . . . has not altered as drastically as

might be supposed, and things are much the same in techniques, underproductivity and underdevelopment. The general pattern of resource availability and distribution remains much the same, so that the basic conditioning factors of development as described by pre-communist writers generally are still valid." It is to be hoped that by the time a second edition is being prepared the intellectual boycott of China will have been lifted sufficiently to permit a more realistic assessment of the Chinese achievements in eradicating the basic causes of poverty and in creating a pattern of economic development specifically adapted to the needs of the densely crowded lands of Monsoon Asia.

The reviewer shares the opinion of many economists that the poverty of peasant Asia is due not so much to the limitations of the physical environment as to institutional factors such as the defective organisation of peasant society. Similarly, the unsatisfying quality of parts of the volume under review might be attributed to deficiencies in the institutional framework—or the academic approach—within which analysis is carried on. The "basic understanding of the processes of change which are radically transforming the Asian landscape" which this work seeks to provide calls for an honest and detached examination of the interrelations of political change and the economic and social developments which are reshaping the cultural landscape of Asia. Such an examination is fundamental to an understanding of the continent's geography; it is no less basic to the formulation of realistic policies by the West. Unfortunately, as this volume shows, such objective analysis is one of the major casualties of the Cold War.

KEITH BUCHANAN

#### THE FIJIAN PEOPLE—ECONOMIC PROBLEMS AND PROSPECTS

A Report to the Fijian Government by O. H. K. Spate, M.A., Ph. D. (Council Paper, No. 13 of 1959 of the Legislative Council of Fiji.) Government Press, Suva, p. 112, 2s. 6d.

With an established reputation for loyalty and courage and with a highly developed traditional culture unusually resistant to external pressures, the Fijian people are held in high regard throughout the Commonwealth. The fact that Fijians were active participants in the recent riots and industrial strife in Suva appears to have come as an unwelcome surprise to many Europeans claiming some insight into Fijian affairs. It is to be hoped that this outburst of industrial unrest will not divert so much official attention to the immediate problems of urbanised Indians and Fijians that important aspects of Professor Spate's message pass unheeded.

Since it deals with the basic weakness in the economic structure of the Colony the Spate Report to the Fijian Government is a timely document of critical importance. More than four-fifths of the territory's rather limited land area are Fijian-owned and the small proportion of this land that is cultivated is usually used ineffectively so that the general welfare of the Colony suffers. The terms of reference for Professor Spate's enquiry required him to consider how far the Fijians' social organisation has acted as a limiting factor in their economic advancement. In addition to examining these factors and various aspects of Fijian custom responsible for the relative backwardness of this Pacific people, Professor Spate was required also to suggest changes for future administrative action.

In the main his survey is concerned with the agricultural and social activities of rural Fijians. Rather limited direct reference is made to the local wage structure, urban poverty, unemployment and other immediate causes of the recent industrial disturbances in the Colony. Nevertheless, all sections of the Spate Report deal with policies and situations directly and indirectly related to the

growing urban problems of the territory. As emphasised in recurring official statements, the low levels of wages available in Fiji reflect the Colony's low average standards of production. Among the causal factors operating, ineffective use of a very large proportion of the Fijian-owned land, combined with over-intensive cultivation of the inadequate areas leased to or owned by Indian farmers, are basic elements in the Colony's economic difficulties.

A most encouraging feature of the Report lies in the fact that the document arises from an official enquiry conducted by an independent investigator with exceptional qualifications for the complex and somewhat delicate task assigned to him. Readers of the Report who are interested in the problems of under-developed countries and in culture conflict situations will agree that Professor Spate has enhanced his considerable reputation in this field of investigation. Although the Report covers a complex situation in considerable detail it is a lively and interesting document with wide appeal for the general reader of Pacific Islands topics as well as for those more especially interested in Fiji or in the socio-economic situation so skilfully analysed. Many will appreciate the deft, light touches and the apt quotations which spice the exposition. Those with personal experience in Fiji and some knowledge of past policies and happenings in the Fijian Administration will be impressed and, in some instances, delighted with the tact and logic of Professor Spate's case for a new deal for enterprising and industrious Fijian producers irrespective of their relationship with the so-called "communal system".

The Report is based on extensive field work, including visits to fifty-two villages scattered throughout the territory. The investigation examines all important aspects of the Fijians' way of life, including land ownership and land tenure problems, the impact of communal and customary obligations on economic activities, the special difficulties of Fijians in monetary and contractual relationships and the housing situation in village and urban communities. The work of all administrative agencies affecting Fijians is examined critically and in detail, since the task proceeded with the full co-operation of the officials directly concerned. The investigation includes a special study of the economic achievements of Fijians working collectively through the communal system as well as the successes and failures of independent Fijian farmers known locally as *galala*. The whole survey is exceptionally frank and lucid. It is always constructive, and in accordance with the author's stated intention it rejects "the careful silence and agile verbal straddle" that are unhelpful contributions to such important but clouded issues.

The main finding of the Report is that the future of the Fijian people lies in turning away from communalism towards individualism in economic affairs. Among other things this would involve a great change in the attitudes of Fijian Administration officials and the hierarchy of chiefs towards the *galala*. During the Second World War enterprising Fijians were encouraged to establish themselves as independent farmers as a special measure to increase the output of local produce. This policy was reversed early in the post-war years and since then, at best, the *galala* have been merely tolerated. Under existing conditions Fijians seeking exemption from village obligations to become *galala* tend to run counter to the policy of the Fijian Administration, which during recent years has been to promote the economic and social advancement of the Fijian through communal activities. The granting of these exemptions is at the discretion of local officials and subject to annual review. *Galala* status is circumscribed by quite stringent conditions, including a requirement that each independent farmer must manage his holding to make a gross income of not less than £100 per year.

Various sections of the Spate Report examine the Administration's highly paternalistic and centralised control of the social and economic activities of the Fijian people. The achievements of the compulsory Fijian Development Fund and

of other agencies such as the Fijian Banana Venture and the recently appointed Economic Development Officers are reviewed and commended. Various village projects that have succeeded under exceptional local leadership are examined for policy guidance. On the evidence before him Professor Spate concludes that the authoritarian procedures and multiplicity of regulations controlling all activities of the Fijian people have given rise to a number of special problems in village life, among which general frustration and repressive bureaucracy are conspicuous. In the words of the Report: "In the Fijian village very little, or nothing, can be done in the way of social or economic activity—not even, in theory, the holding of a dance—without the support, or at least the tacit approval of the Fijian Administration . . ." (p. 31). In Fiji, as elsewhere, excessive controls result in widespread evasion and, quite generally, nominal rather than actual compliance with the regulations is condoned. In theory, rather than in practice, a very large part of the daily round in the rural villages is controlled by pre-ordained Programmes of Work and other rules that are given legal sanction by Fijian Regulations. It is not surprising that Professor Spate sees no promising economic future for the Fijian community whilst individual enterprise and local leadership are so often suppressed or discouraged by policy measures of a defensive character designed to protect the traditional "Fijian Way of Life". Regulations do not confine the dynamic energies of the other races in the Colony within the narrow limitations of a communal system and authoritarian "Programmes of Work" which have ceased to meet the needs of the times. It is somewhat surprising, however, that the detailed recommendations in the Report suggest relatively minor modifications in the administrative field to implement the important basic reforms so effectively advocated.

V. D. STACE

#### "EPPUR SI MUOVE . . ."

Charles F. Richter, *Elementary Seismology*, W. H. Freeman and Company Inc., San Francisco, 1958, pp. 768, £5 2s.

Hugo Benioff, "Circum-Pacific Tectonics", *Publications of the Dominion Observatory*, Ottawa, XX, 2, 1958, pp. 395-402.

G. A. Eiby, *Earthquakes*, Frederick Muller Ltd., London, 1957, pp. 168, 21s.

"And yet it moves," legend makes Galileo say, and for the last thirty years literature has been accumulating on the tectonically active landscape of New Zealand so that the New Zealander no longer has to whisper these words under his breath, as Galileo was reputed to have done. The dominance of horizontal faulting (transcurrent or strike-slip faulting) and the secondary nature of the vertical component of movement which initiates relief have now been traced around the Pacific and the detailed picture of local movements can now be fitted into a world-wide pattern. Discussion of these movements appears in two works of a general nature concerning earthquakes.

The first, Charles F. Richter's *Elementary Seismology*, is one of the most welcome books to appear on the table of the lecturer in physical geography for a long time. The word "elementary" is as seen from the author's viewpoint and the book is by no means elementary as seen by the non-seismologist. Richter discusses, in Chapter 27, California and New Zealand as areas where Pacific margin structure is best known in detail, and draws interesting comparisons.

In both regions a band of great active transcurrent faults traverses the country parallel to the margin of the structural unit of the Pacific. In New Zealand faults cut across river terraces whose post-glacial age is becoming more accurately dated, and Wellman (references in Richter) has shown that the displacement

along these faults is roughly proportional to the age of the terraces as shown by their downcutting. The great transcurrent faults move in a clockwise sense at a rate which can be estimated at about an inch a year. Accumulation of such strain is normally relieved by fault activity which produces earthquakes. Wellman's suggestion of movement along the Alpine Fault which runs from the north-central to the south west of the South Island of over 300 miles since the Mesozoic is of the same order as the present rate of drift and in the same sense, and is one of the same order as movement suggested for the San Andreas fault of California (350 miles).

Richter clearly describes the similar structure of California where the San Andreas Fault is the master fault, corresponding to the Alpine Fault in New Zealand, with geodetically measured drift amounting to 2 inches a year, again in a clockwise sense. In both California and New Zealand the transcurrent movement along these faults is large, and the basin and range structures are the result of smaller vertical components of the faults.

Recent seismic techniques have made possible the determination of the nature of transcurrent faulting which cannot be directly observed and the recent paper by Hugo Benioff, a colleague of Richter's, sums up the available information on a Pacific-wide basis. Around the margin of the structural unit of the Pacific the master faults are transcurrent with clockwise (dextral) movement. Faults which run at right angles to these may be normal (not transcurrent) or counter-clockwise transcurrent and there is a component of over-thrusting as the continental margins tend to be forced against the Pacific unit with the production of mountain-systems and oceanic fore-deeps. Benioff regards the absence of deeps from some portions of the Pacific coast as being part of an historical sequence.

Benioff then points out (p. 406) that, if the measured rate of movement of the San Andreas fault applies to the whole system, the entire Pacific structural unit would complete a revolution in a thousand million years. In the abstract at the head of the paper, however, the time is quoted as three times this. Reference to a globe shows that the first figure is the correct one.

If New Zealand then can be seen in relation to a grandly envisaged world scheme, some details of its home life with earthquakes is given in the admirable book by G. A. Eiby of the Seismological Observatory, Wellington. This splendidly illustrated and clearly written book, designed for the general public, gives details of New Zealand's structure, fault systems and historical earthquakes as part of a general study of what earthquakes are, how we measure them and how we can live with them.

D. W. MCKENZIE